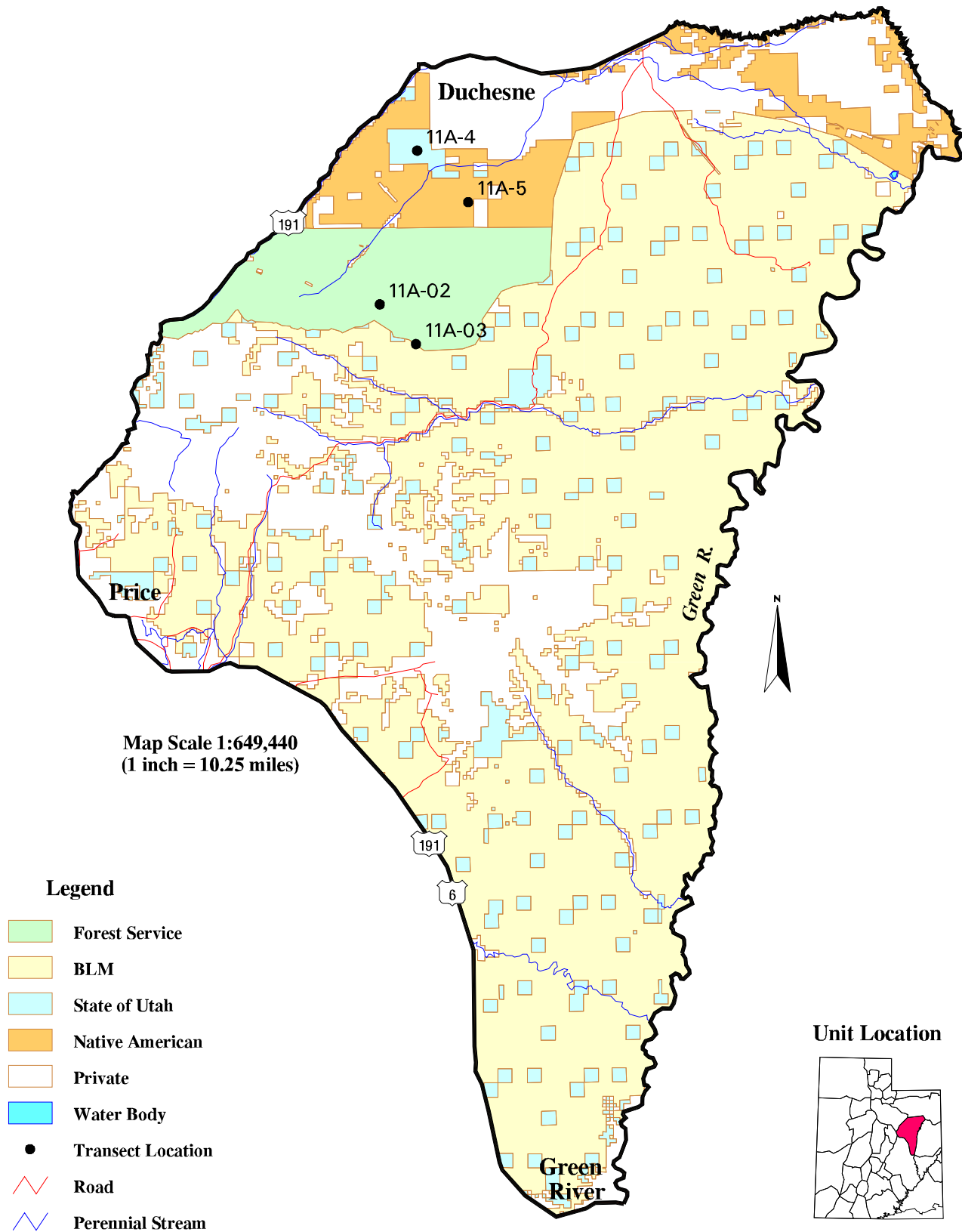


Management Unit 11A



MANAGEMENT UNIT 11A (15) - ANTHRO/RANGE CREEK, ANTHRO

Boundary Description

Duchesne and Uintah counties - Boundary begins at Duchesne and Highway US-191; then southwest on US-191 to the Argyle Canyon Road; southeast on this road to the Nine Mile Canyon Road; east along this road to its end near Bulls Canyon; south from the end of the road to Nine Mile Creek; east along this creek to the Green River; north along this river to the Duchesne River; northwest along this river to Highway US-40; west on US-40 to Duchesne and beginning point (excludes all Ute Indian Tribal lands within this boundary).

Management Unit Description

The 1996 Utah Big Game Annual Report identifies 639,228 acres of land within management unit 11A. The Bureau of Land Management is responsible for 43% of the land area, with U.S. Forest Service and State of Utah lands making up an additional 16% and 5% of the land area respectively. Indian and private lands make up one-third of the land area at 14% and 21% respectively. There is a long and gradual northerly slope to the Anthro Mountain terrain, which lends itself to an abundance of winter range. The long slopes are covered by pinyon-juniper woodland with natural openings of sagebrush. Grassy openings are often found in the drainages. Some ridge tops are covered with black sagebrush. Summer range is limited with most of the high country being comprised of open sagebrush slopes with scattered patches of aspen. Most of the winter range in the unit is available even in severe winters. The upper limits for winter range are generally considered between 8,000 and 8,500 feet. The desert country below 4,000 feet is seldom used by migrating deer.

Livestock Grazing

Cattle grazing is the major activity occurring on Forest Service managed lands within management unit 11A. Oil and gas exploration and drilling with their associated roads and year-round activity are the prominent activities taking place on the lower ends of the ridges. These lands are administered by the BLM and Ute Indians. Firewood cutting is also an important use on the Ute Indian lands.

Information on the current livestock grazing program was provided by the Ashley National Forest. The Cottonwood allotment, where study 11A-1 is located, is a 2-unit deferred rotation system with 326 head of cattle from June 16 to October 15. Prior to 1981, the allotment was generally grazed season long. Study 11A-2 is in the Anthro Mountain allotment and is currently grazed by 481 head of cattle under a 7-unit rest-rotation system from June 1 to October 15. The Antelope Winter allotment, where study 11A-3 is located, is a 3-unit deferred rotation system with 200 head of cattle grazing the allotment from December 1 to March 23.

Big Game Management Objectives

A small, but increasing number of elk constitute the Anthro herd. It has been hunted under a bull only permit system since 1978, but was separated from the larger Avintaquin-White River herd unit in 1983. The elk herd is currently (1996) managed as a limited entry hunting area with an emphasis on quality hunting by maintaining low hunter numbers and a high percentage of mature bulls in the population. The high for bull permits came in 1990 with 22 permits allowed. In 1995, only 7 bull permits were allowed, compared to 13-15 permits allowed between 1991 and 1994. Eleven permits were available in 1997, and 13 in 1998. Hunter success is usually high. Current elk herd management objectives call for a target winter herd size of 700 animals with a minimum post season bull to cow ratio of 8:100, with at least 4 bulls being 2 ½ years of age or older.

Deer numbers on the Anthro Mountain unit continue to be relatively low. Buck harvest averaged 161/year from 1979 to 1983 and then doubled to an average annual harvest of 387 bucks from 1984 to 1988. From 1989 to 1991, buck harvest numbers steadily declined from a high of 579 in 1988 to 237 in 1991. Since 1991, buck harvest numbers have stayed fairly constant with an average of 154/year. Success has remained fairly constant over all years at around 33%. The current deer herd unit plan calls for a target wintering herd of 2,500 animals with an annual harvest of 250 bucks.

Unfortunately, the pellet transects are no longer maintained so deer days use per hectare estimates for key areas are unavailable.

Pronghorn are also present in the study area. They have been observed on Myton Bench and on the pinyon-juniper and sagebrush ridges of Lower Cottonwood and Antelope Canyons. Buck hunting was first permitted in 1978.

Study Site Description

The Upper Cottonwood Ridge (11A-1) study samples an aspen type at 9,200 feet, while the Wirefence Canyon (11A-2) and Chokecherry Canyon (11A-3) studies are located in the predominant sagebrush/grass type. These studies were established in late September of 1982, then re-read in late July 1988. Two additional studies were established in early August 1988, which sample representative winter range for the area. The Cottonwood Canyon (11A-4) study is on DWR land, while the Nutters Canyon (11A-5) study is apparently on the Uintah and Ouray Indian Reservation (it was originally thought to be on BLM). They are both located in naturally open sagebrush valleys surrounded by pinyon-juniper woodland. All sites were reread in 1995 and 2000, with the exception of study number 11A-1 which was not read in 2000.

Trend Study 11A-1-00

Study site name: Upper Cottonwood Ridge .

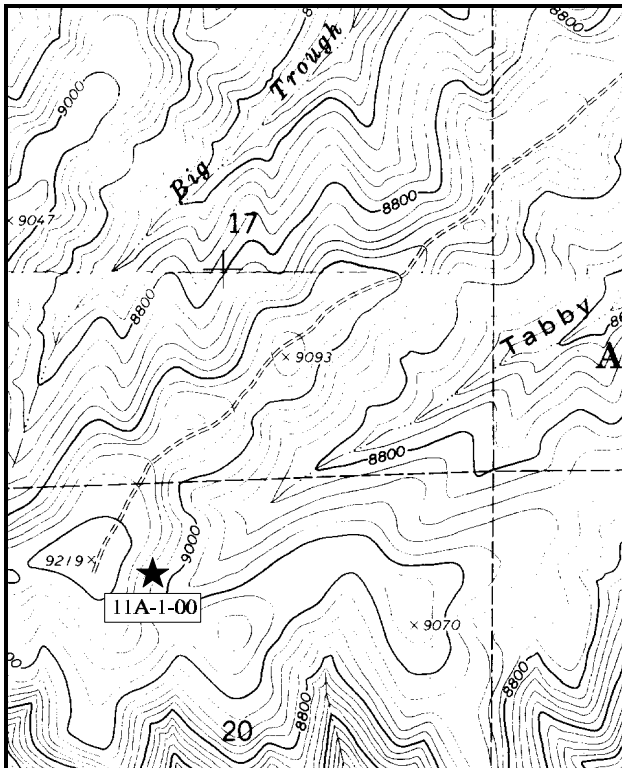
Range type: Quaking Aspen .

Compass bearing: frequency baseline 110°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

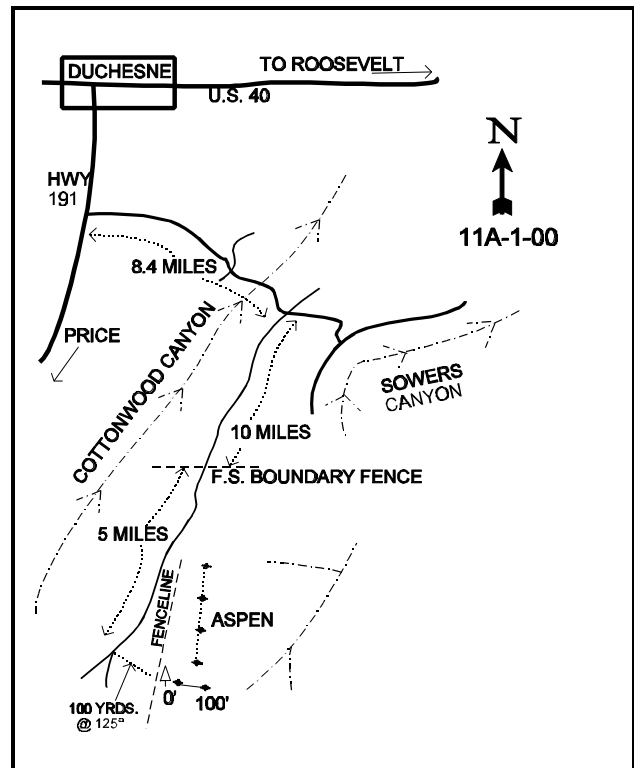
LOCATION DESCRIPTION

From Duchesne, go south on Highway 191 towards Price for approximately 2.5 miles. Turn left and proceed southeast on the main road for 8.4 miles to a fork above Sowers Canyon. Bear right and drive up along Cottonwood Ridge for about 10 miles to the FS boundary fence. From there, continue 5 miles to a faint fork on top of the ridge above the head of Tabby Canyon. From the fork, walk 64 paces bearing 110°M to the 0-foot baseline stake. The 0-foot stake is just beyond a lone conifer, on the edge of the aspens. The baseline runs SE into the young aspen stand. The 0-foot baseline stake has a red browse tag, #7088, attached.



Map Name: Lance Canyon

Township 6S , Range 6W , Section 20



Diagrammatic Sketch

UTM 4421962 N , 535263 E

DISCUSSION

Trend Study No. 11A-1 (15-1)

*** This site was not read in 2000. Only the site narrative is included here. Refer to the 1995 "Utah Big Game Range Trend Studies" report for maps and data tables for this site.

The Upper Cottonwood Ridge study samples summer range at an elevation of 9,160 feet. This study has an easterly aspect with a slope of 50%. Soils are fine textured and contain moderate amounts organic matter. Surface rock and pavement are scarce. Due to the steep slope, dense aspen with a thick shrub understory, cattle are not able to make much use of this site.

This small, uneven-aged stand of quacking aspen at the head of Tabby Canyon receives light to moderate use by big game. This allotment is grazed by 326 head of cattle from June 16 to October 15 as part of a two-unit deferred rotation system.

Vegetative aerial cover for the site was estimated at 47% in 1995. This is an increase from the previous years data as only basal cover was estimated. Litter cover estimates are similar and is estimated at 69%. No erosion is evident with a low percentage of bare ground (12%) because of the high amounts of protective vegetative and litter cover.

During the 1982 and 1988 reading, aspen density was estimated using three 1/200 acre density plots which estimated 3,933 plants/acre and 6,066 plants/acre for each year respectively. All aspen trees were classified as young with no apparent hedging in 1988. In 1995, point-center quarter data estimated 1,044 trees/acre with an average diameter of 2.4 inches. Aspen was mistakenly not counted in the shrub strips and not classified for form class and vigor in 1995, so no comparisons can be made with the past data. Serviceberry, not encountered on the density plots in 1982, yet estimated at 9,266 shrubs/acre in 1988, now have an estimated density of only 180 plants/acre. The high 1988 density estimate can be attributed to an abundance of young plants and a much smaller sample size. These young plants did not survive the drier years or the intraspecific competition. The serviceberry plants show only light utilization with an average height of 20 inches and crown diameter of 29 inches. The mountain big sagebrush population has shifted from a mostly young population reported in 1982 and 1988, to a mostly mature population in 1995. The plants have increased in average height to 19 inches and crown diameter to 25 inches. There is light use, if any, on the plants at this time. Very few of the plants were classified as decadent and the dead to live ratio is 1:36. Snowberry has shown a steady increase over the years and now has an estimated density of 9,040 plants/acre. Snowberry is stoloniferous and was counted as a plant if it was rooted within the sample area. An increase in this species would be expected because it is moderately shade tolerant, allowing it to out-compete the surrounding species as the aspen canopy closes. The size of the plants has stayed relatively stable with an average height of 17 inches and an average crown diameter of 23 inches. The Wood's rose density has also increased and is estimated at 6,180 plants/acre in 1995. It is a mostly mature, small statured population. Chokecherry is scattered throughout the site with an estimated density of 1,000 plants/acre. These plants average less than 2 feet in height with an average crown diameter of 1½ feet. Currently, all of these browse species show only light utilization.

Grasses comprise 9% of the total vegetative cover. Nearly half of the grass cover is contributed by a sedge. Bluebunch wheatgrass has the next highest cover for grasses. Other grasses include: Kentucky bluegrass, mountain brome, slender wheatgrass, muttongrass and Columbia needlegrass.

Thirty-three species of forbs were encountered with a *Penstemon spp.* having the highest cover value. Sum of nested frequency for perennial forbs has increased since 1988 and total quadrat frequency has increased since 1982. Most species encountered are perennials with very little chance of annual species invading this high elevation site.

1982 APPARENT TREND ASSESSMENT

This site is currently in good to excellent condition. It is unfortunate that deer herd unit 11A does not contain more acreage of similar vegetation. Herd unit productivity could be greatly improved. A key factor on this site is the apparent relative lack of livestock use. Other aspen sites further to the east and south have been heavily utilized and hence have rather depleted understories. Range trend is stable or perhaps even improving. A few conifers (i.e., white fir and douglas fir) are present but offer no immediate ecological threat.

1988 TREND ASSESSMENT

The increased density and frequency of a variety of herbaceous vegetation found in 1988 confirms the upward vegetative trend. The increase in forbs, a key management component, was not as large as the increase in grasses. The changes in browse density shown on the density plots were not supported by the frequency data, so are probably not significant. Conifer invasion is not a factor in this aspen community type.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - up (5)

1995 TREND ASSESSMENT

Soil trend on this site is stable and in excellent condition. The herbaceous understory and litter, as well as the aspen canopy, provide good protection to the soil. There is abundant browse cover, but at this elevation, grasses and forbs will be preferred for most of the season over browse. Browse trend is stable. It should be noted that the large change in density for serviceberry was due to a combination of a very large number of young plants that were lost with the extended drought and the small sample size in 1988 which happened to be directly over a patch of small plants. This has been remedied with a much larger sample size and better distributed sample giving much more reflective estimates for browse that have clumped or discontinuous distributions. Density of conifers is low at this time. The herbaceous understory accounts for 39% of the vegetative cover (30% forbs and 9% grasses). Both forbs and grasses are diverse and fairly abundant. Sum of nested frequency for grasses and forbs has increased since 1988 with most species being relatively palatable to livestock and wildlife. Herbaceous understory trend is up.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - up (5)

Trend Study 11A-2-00

Study site name: Wirefence Canyon .

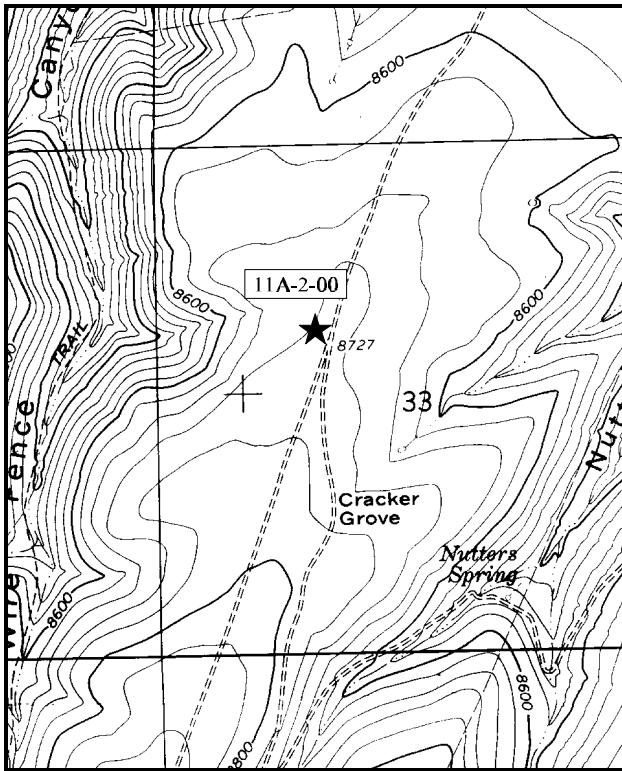
Range type: Big Sagebrush-Grass .

Compass bearing: frequency baseline 348°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (16 & 86ft), line 2 (33ft), line 3 (52ft), line 4 (66ft). Belt 3 and belt 5 rebar @ 2ft.

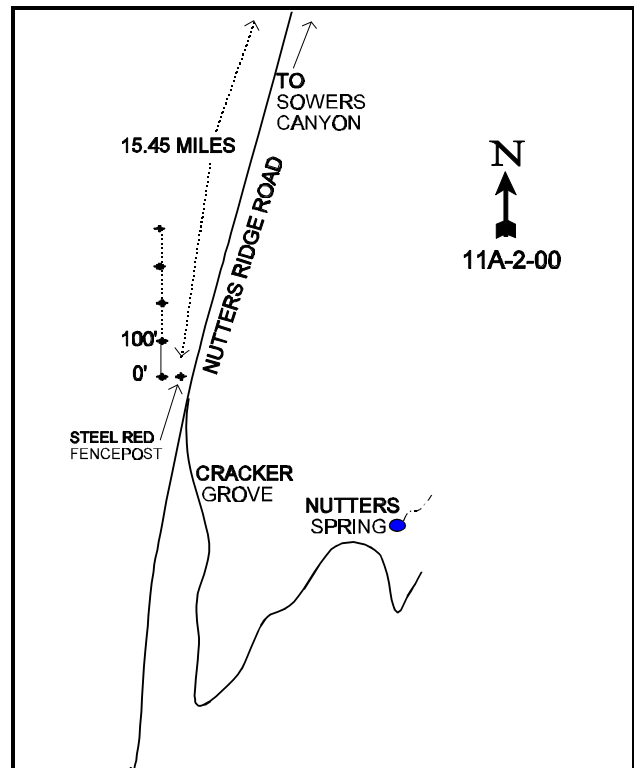
LOCATION DESCRIPTION

From the junction of Highway U.S. 40 and the Sowers Canyon Road (near Bridgeland), drive south on the Sowers Canyon Road for 8.5 miles to the Nutters Ridge Road. Turn left here by an old ranch and proceed south along Nutters Ridge for 15.5 miles to a narrow "Y" in the road. Six paces west of the fork is a red steel fencepost. The 0-foot baseline stake is 15 paces west of the red fencepost. The baseline is marked by green, 12-18 inch tall fenceposts.



Map Name: Dyer Mountain

Township 6S, Range 5W, Section 33



Diagrammatic Sketch

UTM 4418575.272 N, 546523.990 E

DISCUSSION

Trend Study No. 11A-2 (15-2)

The Wirefence Canyon trend study is located on summer range within the large sagebrush-grass park occupying a flat ridge between the uppermost reaches of Wirefence and Nutters Canyons. Elevation is 8,700 feet with almost flat terrain. This study is located immediately adjacent to an old permanent line-intercept study established in 1977 and is intended to replace it. After decades of season-long grazing by cattle and sheep from 1915 to 1944, a summer rest-rotation grazing system was established in 1972. This study is now grazed by 481 head of cattle from June 1 to October 15 as a 7-unit rest-rotation system. Escape or thermal cover is totally lacking on the study site. The nearest cover is a ½ mile away in Nutters Canyon or within an isolated but badly depleted aspen grove (Cracker Grove), approximately the same distance to the southeast. Use of the site by wildlife is currently light with 1 deer day use/acre (3 ddu/ha) and 18 elk days use/acre (44 edu/ha) being estimated from pellet group transect data taken along the baseline in 2000. Livestock use is currently at a more moderate level with 52 cow days use/acre (128 cdu/ha) being estimated in 2000.

Supplemental site information provided by the Ashley National Forest indicate that numerous treatments have been done on the Anthro Mountain allotment, including plowing and seeding on this particular study site (a 2,363 acre treatment) in 1958 and 1959. These old treatments have future plans for maintenance, which includes burning and/or spraying.

Soil on the site is a moderately shallow loam with an estimated effective rooting depth of just less than 12 inches. Soils are neutral in reactivity (pH of 7.2) and average soil temperature is 53°F at nearly 14 inches in depth. Phosphorus is low at 5.1 ppm, where values less than 10 ppm can limit normal plant growth and development. A hardpan is present about 6 inches below the soil surface as illustrated by the stoniness index estimated from penetrometer readings. Due to the nearly level terrain, erosion is not severe. Vegetative aerial cover was estimated at 36% in 1995, increasing to 48% in 2000. Earlier estimates are considerably lower as only basal vegetative cover was estimated prior to 1995. Cover from rock and pavement combined are estimated at 6% in 1995 and 8% in 2000. Litter cover has fluctuated through time as a function of precipitation. At this time, litter cover is estimated at 40%, an increase from 34% in 1995. Percent bare ground, while fairly steady at 24% in 1982 and 1988, has increased to 32% and 37% in 1995 and 2000 respectively.

Mountain big sagebrush is the dominant overstory species. It has generally been healthy and vigorous in the past with light to moderate use and mostly good vigor. However in 2000, sagebrush displays a dramatic increase in plants showing poor vigor (4% in 1995 to 41% in 2000) with a moderate increase in percent decadency (6% in 1995 to 19% in 2000). Many of the mature and decadent individuals in the population displayed a chlorotic appearance in 2000. Therefore, they were classified as having poor vigor. The drought in 2000 is most likely the cause of this increase in poor vigor on sagebrush. A return to normal precipitation patterns should improve sagebrush vigor in the future. Currently, the sagebrush population is composed of mostly mature individuals (70%) with a moderate level of young plant recruitment (11%) into the population. Biotic potential (# of seedlings) is relatively low at 3% and 1% in 1995 and 2000 respectively. Average leader growth on sagebrush is currently low at only 3 inches. Mountain big sagebrush provides about 70% of the total browse cover in both 1995 and 2000.

Mountain low rabbitbrush density has remained relatively constant over all years with a mostly mature age structure. Mountain low rabbitbrush currently accounts for 28% of the total browse cover with an estimated density of 3,980 plants/acre. Other browse present on the site include: broom snakeweed, gray horsebrush, snowberry and fringed sagebrush.

The understory is the key component on this summer range and it makes up nearly 80% of the total vegetative cover for the site in 2000. Smooth brome is the dominant species, being sampled in every quadrat during all sampling periods and remaining at a fairly stable nested frequency. Smooth brome is more palatable when it is young and loses palatability with age. However, when it has been covered by snow it will soften and increase in palatability. Mutton bluegrass is the second most abundant grass, increasing significantly in nested frequency in 2000. Other species include: sheep fescue, Sandberg bluegrass, Prairie junegrass, crested wheatgrass, intermediate wheatgrass and bluebunch wheatgrass. There was no noticeable use on grasses in 2000. As a group, perennial grasses showed almost no change in sum of nested frequency from 1995 to 2000. No annual grasses have been sampled in any year. Perennial forbs are diverse, but significantly decreased in sum of nested frequency in 2000 due to drought. Many of the species encountered are considered low growing increasers. Looseflower milkvetch is the most abundant forb providing over 6% average cover (or 74% of the total forb cover) and significantly increasing in nested frequency in 2000. Annual forbs are present, but infrequent.

1982 APPARENT TREND ASSESSMENT

Range trend appears to be in a state of decline. The principle cause is almost certainly cattle grazing. Without some serious reduction or a grazing system allowing some rest and regeneration, the prognosis is not good for this site.

1988 TREND ASSESSMENT

Ground cover percentages remained about the same between 1982 and 1988. The estimate for litter cover (51%) is good, especially considering the grazing pressure this site received in 1988 due to its close proximity to water and a salt lick. Percent cover of bare ground remains at 24%. Current observations indicate that the soil condition and trends have stabilized. Trend for browse is stable. Mountain big sagebrush remains at a stable density, displays a low decadency rate and has a high rate of recruitment from young plants (46%). Trend for the herbaceous understory appears stable. Twenty-three perennial grass and forb species were sampled in 1988 making it an important component of this vegetative community.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

1995 TREND ASSESSMENT

The bare interspaces between the mountain big sagebrush show some signs of erosion, but this is only slight. The level terrain helps keep the soil in place along with the vegetation and litter cover. Therefore, soil trend is considered stable. The mountain big sagebrush population is stable with moderate utilization and a low decadency rate. The broom snakeweed and mountain low rabbitbrush populations also appear stable with a mature age structure, although the mature plants are increasing in size. Browse trend is stable at this time. The herbaceous understory accounts for 69% of the total vegetative cover. The dominant species is smooth brome which comprises 27% of the total vegetative cover. The sum of nested frequency for perennial forbs has increased slightly. Many of the forb species are not sought after by wildlife or livestock. Although sum of nested frequency has increased for forbs, a different composition may be desired. Herbaceous understory trend is slightly upward.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly upward (4)

2000 TREND ASSESSMENT

Trend for soil is stable. Erosion appears minimal at the present time and the ratio of protective ground cover to bare ground remained at nearly the same level as in 1995. Trend for browse is slightly down as the number of mountain big sagebrush with poor vigor sharply increased (4% to 41%). There was also a moderate increase in those classified as decadent (6% to 19%) since 1995. Recruitment from young plants also decreased from 42% to 11%. Increases in poor vigor and decadency are likely due to the extremely dry conditions in 2000. These parameters should improve with normal precipitation. Trend for the herbaceous understory is slightly down as sum of nested frequency for perennial forbs decreased by almost 50% due to drought. Forbs should increase on this summer range with normal precipitation.

TREND ASSESSMENT

soil - stable (3)

browse - slightly down (2)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --

Herd unit 11A, Study no: 2

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron cristatum	16	33	22	19	7	14	12	.97	1.05
G	Agropyron intermedium	_b 41	_a 3	_a 8	-	19	2	3	.01	.16
G	Agropyron spicatum	_a -	_a -	_b 13	-	-	-	8	-	.55
G	Bromus inermis	330	337	334	23	100	100	100	9.80	16.74
G	Elymus salina	_b 34	_c 56	_a 4	-	13	24	2	.68	.18
G	Festuca ovina	_a -	_b 45	_c 72	-	-	20	35	.63	1.30
G	Koeleria cristata	_b 52	_b 51	_a 27	2	29	25	11	.73	.73
G	Poa fendleriana	_b 123	_a 66	_b 120	-	53	30	52	1.52	2.95
G	Poa secunda	-	40	39	29	-	18	18	.60	.36
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		596	631	639	71	221	233	241	14.96	24.04
Total for Grasses		596	631	639	71	221	233	241	14.96	24.04
F	Agoseris glauca	-	2	-	-	-	1	-	.00	-
F	Allium spp.	-	3	-	-	-	1	-	.00	-
F	Androsace septentrionalis (a)	-	_b 32	_a 7	-	-	13	3	.06	.01
F	Arabis drummondi	_a 4	_b 20	_a 1	-	2	10	1	.07	.00
F	Astragalus argophyllus	_a 4	_{ab} 23	_b 33	1	3	11	14	.22	.46
F	Astragalus convallarius	4	12	4	1	2	5	2	.05	.03
F	Astragalus detritalis	-	6	-	-	-	2	-	.03	-
F	Astragalus tenellus	_a 132	_a 99	_b 167	-	54	42	72	4.39	6.58
F	Aster spp.	_a -	_b 26	_a -	-	-	9	-	.70	-

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	Castilleja flava	_b 19	_{ab} 12	_a 5	-	11	6	3	.14	.04
F	Chaenactis douglasii	_b 6	_b 8	_a -	-	4	3	-	.16	-
F	Cymopterus longipes	_a -	_c 122	_b 33	-	-	54	16	.77	.22
F	Descurainia pinnata (a)	-	3	-	-	-	1	-	.00	-
F	Eriogonum alatum	-	-	-	5	-	-	-	.00	-
F	Erigeron eatonii	_b 26	_b 30	_a 7	2	13	17	3	.17	.06
F	Eriogonum umbellatum	_a 15	_b 65	_a 26	-	7	25	14	1.56	.78
F	Hedysarum boreale	_a -	_b 18	_a 4	-	-	7	1	.25	.00
F	Hymenoxys acaulis	-	1	-	-	-	1	-	.00	-
F	Ipomopsis aggregata	_b 8	_a -	_a 1	-	3	-	1	-	.03
F	Lesquerella spp.	_b 40	_a -	_a -	-	24	-	-	-	-
F	Linum lewisii	2	-	3	2	1	-	1	.00	.01
F	Lupinus argenteus	6	10	6	1	5	4	3	.16	.33
F	Machaeranthera canescens	_a -	_b 13	_a 1	1	-	6	1	.27	.15
F	Oxytropis sericea	_b 40	_a 2	_a -	-	19	2	-	.01	-
F	Penstemon caespitosus	_b 48	_b 48	_a 5	-	24	21	4	.66	.09
F	Penstemon comarrhenus	-	1	-	-	-	1	-	.15	-
F	Physaria acutifolia	_a -	_c 63	_b 7	-	-	29	4	.23	.04
F	Phlox longifolia	11	21	9	-	5	9	4	.09	.04
F	Potentilla spp.	3	-	-	-	1	-	-	-	-
F	Schoenocrambe linifolia	5	7	-	-	3	3	-	.02	-
F	Senecio canus	_a -	_b 7	_{ab} 2	-	-	3	1	.06	.00
F	Thlaspi arvense (a)	-	1	-	-	-	1	-	.00	-
Total for Annual Forbs		0	36	7	0	0	15	3	0.07	0.01
Total for Perennial Forbs		373	619	314	13	181	272	145	10.24	8.93
Total for Forbs		373	655	321	13	181	287	148	10.32	8.94

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 11A, Study no: 2

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia frigida	2	1	.00	-
B	Artemisia tridentata vaseyana	80	70	8.18	6.43
B	Chrysothamnus viscidiflorus lanceolatus	80	68	3.20	2.56
B	Gutierrezia sarothrae	34	23	.04	.27
B	Tetradymia canescens	9	15	.15	.03
Total for Browse		205	177	11.58	9.30

BASIC COVER --

Herd unit 11A, Study no: 2

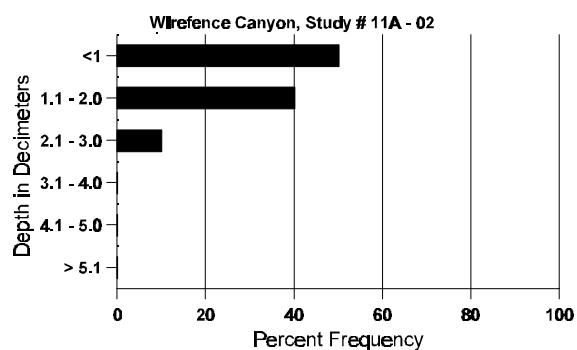
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	354	357	7.5	6.25	36.06	48.48
Rock	193	100	3.25	3.00	3.17	2.85
Pavement	252	257	18.00	15.50	3.07	5.52
Litter	392	374	46.25	51.25	34.34	40.47
Cryptogams	4	1	.50	0	.15	.15
Bare Ground	344	341	24.50	24.00	32.06	37.24

SOIL ANALYSIS DATA --

Herd Unit 11A, Study # 2, Study Name: Wirefince Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
11.67	53.6 (13.94)	7.2	43.4	33.0	23.56	4.4	5.1	96.0	0.8

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 11A, Study no: 2

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'95	'00	00	00
Rabbit	6	10	339	N/A
Elk	15	10	235	18 (45)
Deer	1	6	52	4 (10)
Cattle	1	12	626	52 (129)
Sage Grouse	-	-	44	N/A

BROWSE CHARACTERISTICS --

Herd unit 11A, Study no: 2

A Y G R E	S E	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.		
Artemisia frigida																			
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1		
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0		
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0		
	95	1	1	-	-	-	-	-	-	-	2	-	-	-	40	4	10		
	00	-	-	-	-	-	-	1	-	-	1	-	-	-	20	3	4		
% Plants Showing		<u>Moderate Use</u>					<u>Heavy Use</u>					<u>Poor Vigor</u>					<u>%Change</u>		
		'82					00%					00%							
		'88					00%					00%							
		'95					50%					00%					-50%		
		'00					00%					00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82		0	Dec:	-			
												'88		0		-			
												'95		40		-			
												'00		20		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	3	1	-	-	-	-	-	-	-	4	-	-	-	266		4	
	95	6	-	-	-	-	-	-	-	-	6	-	-	-	120		6	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
Y	82	10	-	-	-	-	-	-	-	-	10	-	-	-	666		10	
	88	19	11	-	-	-	-	-	-	-	30	-	-	-	2000		30	
	95	61	25	-	-	-	-	-	-	-	86	-	-	-	1720		86	
	00	12	7	-	-	-	-	-	-	-	18	-	1	-	380		19	
M	82	36	1	-	-	-	-	-	-	-	35	-	2	-	2466	15 18	37	
	88	24	6	-	-	-	-	-	-	-	30	-	-	-	2000	14 20	30	
	95	37	55	14	-	-	-	-	-	-	103	-	3	-	2120	14 26	106	
	00	54	59	5	-	-	-	-	-	-	66	-	52	-	2360	13 25	118	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	4	-	-	-	-	-	-	-	5	-	-	-	333		5	
	95	4	3	5	-	-	-	-	-	-	7	-	-	5	240		12	
	00	14	17	1	-	-	-	-	-	-	16	-	10	6	640		32	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	160		8	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	180		9	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			02%			00%			+28%							
		'88			32%			00%			- 6%							
		'95			41%			09%			-17%							
		'00			49%			04%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	3132	Dec:	0%			
												'88	4333		8%			
												'95	4080		6%			
												'00	3380		19%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus lanceolatus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
Y	82	7	-	-	-	-	-	-	-	-	7	-	-	-	466		7	
	88	13	-	-	-	-	-	-	-	-	13	-	-	-	866		13	
	95	27	-	-	-	-	-	-	-	-	27	-	-	-	540		27	
	00	27	-	-	-	-	-	-	-	-	27	-	-	-	540		27	
M	82	50	2	-	-	-	-	-	-	-	52	-	-	-	3466	8 13	52	
	88	41	2	-	-	-	-	-	-	-	43	-	-	-	2866	5 4	43	
	95	217	-	-	-	-	-	-	-	-	217	-	-	-	4340	8 11	217	
	00	166	-	-	-	-	-	-	-	-	166	-	-	-	3320	7 9	166	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	1	-	-	-	-	-	3	-	-	-	60		3	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		03%			00%			00%			- 3%							
'88		04%			00%			00%			+22%							
'95		00%			00%			00%			-20%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	3932	Dec:	0%			
												'88	3798		2%			
												'95	4880		0%			
												'00	3920		2%			
Eriogonum microthecum																		
M	82	9	-	-	-	-	-	-	-	-	9	-	-	-	600	2 4	9	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	600	Dec:	-			
												'88	0		-			
												'95	0		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	3	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	7	-	-	-	-	-	-	-	-	-	-	-	-	140		7	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	25	-	-	-	-	-	1	-	-	26	-	-	-	1733	4	4	26
	95	72	-	-	-	-	-	-	-	-	72	-	-	-	1440	7	8	72
	00	36	-	-	-	-	-	-	-	-	36	-	-	-	720	4	5	36
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	-	-	-	-	-	-	2	40		2	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%			- 9%							
'95		00%			00%			00%			-52%							
'00		00%			00%			05%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	1733		0%			
												'95	1580		0%			
												'00	760		5%			
Symphoricarpos oreophilus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	12	15	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	9	20	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	20		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Tetradymia canescens																		
Y	82	1	4	-	-	-	-	-	-	-	1	4	-	-	333		5	
	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	95	2	1	-	-	-	-	-	-	-	3	-	-	-	60		3	
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
M	82	-	1	-	-	-	-	-	-	-	-	1	-	-	66	10	11	
	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	9	12	
	95	5	2	-	-	-	-	-	-	-	7	-	-	-	140	7	10	
	00	14	2	2	-	-	-	-	-	-	18	-	-	-	360	6	9	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	4	-	-	-	-	-	-	-	-	4	-	-	-	266		4	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			83%			00%			+40%							
		'88			00%			00%			-70%							
		'95			30%			00%			+52%							
		'00			10%			10%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	399	Dec:	0%			
												'88	665		40%			
												'95	200		0%			
												'00	420		0%			

Trend Study 11A-3-00

Study site name: Chokecherry Canyon.

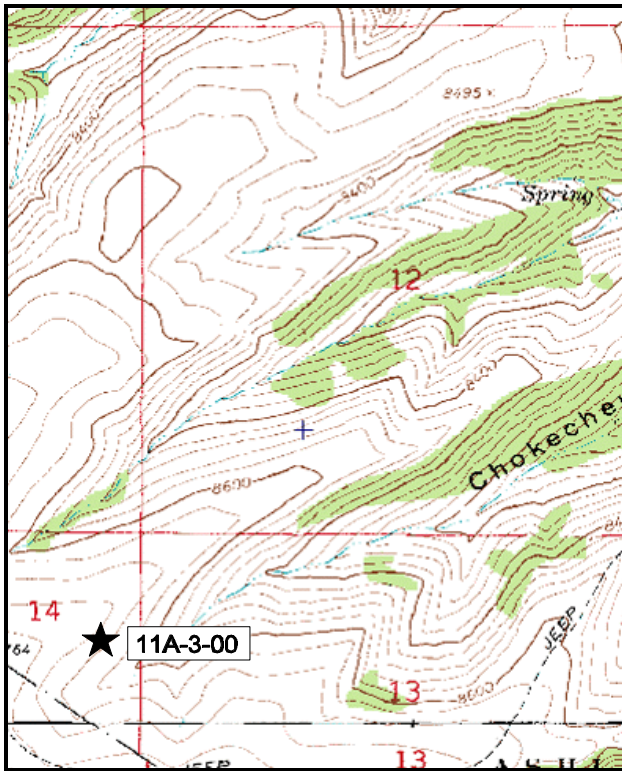
Range type: Sagebrush- Grass Burn.

Compass bearing: frequency baseline 348°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (6 & 95ft), line 2 (25ft), line 3 (46ft), line 4 (62ft).

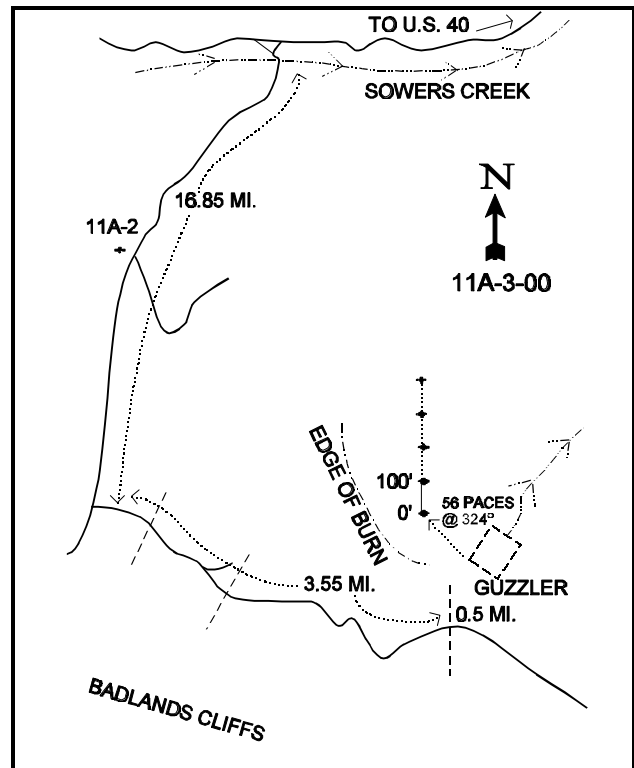
LOCATION DESCRIPTION

From the junction of Highway U.S. 40 and the Sowers Canyon Road (near Bridgeland), proceed south on the Sowers Canyon Road for 8.5 miles to the Nutters Ridge road. Turn left and drive south 16.85 miles up Nutters Ridge to a "T" intersection above the Badland Cliffs. Turn left and go 3.55 miles along the edge to a fence. Continue 0.5 miles and stop. Walk north over the ridge to a large, fenced guzzler. From the southwest fence corner, the 0-foot baseline stake is located 56 paces away at a bearing of 324°. The baseline is marked by green steel fenceposts, 12-18 inches in height.



Map Name: Anthro Mountain

Township 7S, Range 5W, Section 14



Diagrammatic Sketch

UTM 4414055.516 N, 550639.866 E

DISCUSSION

Trend Study No. 11A-3 (15-3)

The Chokecherry Canyon trend study is located at the head of Chokecherry and Alkali Canyons and samples a prescribed burn treatment on a sagebrush/grass type. The burn was completed in 1977 and consumed approximately 500 acres. The burn was not seeded, however native species have readily recolonized the burned area. Elevation at the study site is 8,600 feet. A wildlife guzzler is located adjacent to the site. The aspect is to the north with a gentle 10% slope. The area where the site lies is grazed on a 3-unit deferred rotation system with 200 head of cattle grazed from December 1 to March 23. Wildlife use on the site is light by deer and moderately high for elk with an estimated 4 deer days use/acre (10 ddu/ha) and 84 elk days use/acre (207 edu/ha) in 2000. Cattle use was light this past year with only 1 cow day use/acre (2 cdu/ha) being estimated. Animal use is estimated from a pellet group transect read along the sampling baseline of the study site.

Soils are a moderately shallow clay loam with neutral reactivity (pH of 6.9). The stoniness index shows rock to be fairly uniformly distributed throughout the profile. Soil depth increases further down slope in the drainage bottom. Total vegetative cover is moderately high at 45% and 50% in 1995 and 2000 respectively, with at least half of this total coming from perennial grasses in both years. High grass cover, coupled with abundant litter cover at nearly 50%, results in minimal erosion. Rock and pavement cover combined are estimated at 10%. Percent bare ground was low in 1995 at 13%, but increased in 2000 due to a large decrease in the forb component due to drought.

The two principle browse species are mountain big sagebrush and mountain low rabbitbrush. In 2000, the mountain low rabbitbrush population is estimated at 5,800 plants/acre with a mostly mature age structure (80%). Mature plants show light use and average height is 8 inches with an average crown diameter of 11 inches. Leader growth on rabbitbrush averaged between 3-4 inches in 2000. The mountain big sagebrush population is productive and vigorous and is the key browse at this site. Mountain big sagebrush density was estimated at 1,500 plants/acre in 1995, increasing to an estimated 6,000 plants/acre in 2000. Hedging is light to moderate with mostly good vigor throughout the population. Stature of sagebrush on this site is relatively small with an average height of 14 inches and crown of 25 inches in 2000. Age class distribution indicates a rapidly expanding population with nearly half of the population being young plants. Percent decadency remains low at 3% in 2000. Average leader growth on sagebrush was estimated at about 3 inches. Other browse include: snowberry, gray horsebrush and dwarf rabbitbrush. In 2000, gray horsebrush showed the most use of any browse species on the site with 88% of the plants sampled displaying moderate to heavy use. Average leader growth was less than one inch in 2000. Density for this species is currently estimated at 500 plants/acre.

Perennial grasses are the dominant vegetative component on the site. They provided 22% and 26% average cover in 1995 and 2000 respectively. Eleven species have been sampled during the past 3 sampling years, with bluebunch wheatgrass currently being the most abundant. Other abundant species include: Letterman needlegrass, needle-and-thread, slender wheatgrass and thickspike wheatgrass. Sum of nested frequency for perennial grass species has slightly decreased with each reading since 1988. In 2000, nested frequency of thickspike wheatgrass, needle-and-thread and Prairie junegrass significantly decreased, while that of bluebunch wheatgrass significantly increased. All other species remained at stable frequencies in 2000. Identification of grasses was difficult in 2000 due to the lack of heads and common physical characteristics between the species. Minimal use was noted on grasses in 2000.

Forbs are diverse and have been moderately abundant at this site. In 1995, twenty-nine species of forbs were encountered, with an increase in sum of nested frequency from the 1988 level. However, due to drought in 2000, forbs were far less abundant in number, cover and sum of nested frequency. Bastard toadflax provides the greatest amount of forb cover, followed by silvery lupine, sulfur eriogonum and Watson penstemon.

1982 APPARENT TREND ASSESSMENT

Soil trend appears stable but could decline if grazing intensity were to increase. Vegetative condition is good considering the perceived management objectives of forb enhancement.

1988 TREND ASSESSMENT

Trend for soil is stable with adequate cover from litter and herbaceous vegetation to limit erosion. Browse species are increasing in abundance following the prescribed burn. Trend for browse is slightly up with the increase in shrub densities. Trend for the herbaceous understory is up with abundant herbaceous vegetation. Basal vegetative cover nearly doubled in 1988.

TREND ASSESSMENT

soil - stable (3)

browse - slightly up (4)

herbaceous understory - up (5)

1995 TREND ASSESSMENT

Soil trend is stable with little bare ground and excellent vegetative and litter cover. The mountain big sagebrush density appears to be expanding in size and exhibits moderate hedging. Mountain low rabbitbrush is the dominate browse species (50% of browse cover) with light to moderate hedging and a stable population. Snowberry is heavily utilized with an apparent stable population and heavy hedging. These factors lead to a slightly upward browse trend. The herbaceous understory sum of nested frequency is increasing although there is a slight decrease in the grass sum of nested frequency. Diversity of forbs has increased along with the sum of nested frequency for perennial forbs. There are very few annual species. This would indicate a stable herbaceous understory trend.

TREND ASSESSMENT

soil - stable (3)

browse - slightly upward (4)

herbaceous understory - stable, slightly down for grasses and slightly up for forbs (3)

2000 TREND ASSESSMENT

Trend for soil is stable. Vegetation and litter cover remain high and erosion is minimal. Trend for browse is slightly up. Mountain big sagebrush has high recruitment from young plants and continues to increase in density. However, this increase in density is not at the expense of the herbaceous understory as cover from sagebrush is currently only 7%. Trend for the herbaceous understory is slightly down. Sum of nested frequency for perennial grasses slightly decreased, while that of perennial forbs decreased by more than half in 2000. This drastic decrease is due to the drought experienced in 2000. This trend should improve with normal precipitation patterns.

TREND ASSESSMENT

soil - stable (3)

browse - slightly up (4)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --

Herd unit 11A, Study no: 3

T y p e	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	c307	b211	a89	46	96	67	36	4.99	.77
G	Agropyron spicatum	a-	b32	c209	-	-	11	66	.87	12.41
G	Agropyron trachycaulum	a16	b85	b56	28	5	30	25	2.70	1.16
G	Bromus anomalus	b25	a-	a3	-	9	-	1	-	.03
G	Carex spp.	b49	a5	a9	-	22	2	5	.03	.27
G	Festuca ovina	a-	b11	b10	-	-	4	6	.04	.27
G	Koeleria cristata	a7	b49	a12	1	5	16	4	2.57	.21
G	Poa fendleriana	b83	a18	a42	-	32	10	16	.25	.69
G	Stipa columbiana	-	4	-	9	-	1	-	.15	-
G	Stipa comata	a17	c122	b62	16	7	45	25	3.59	1.60
G	Stipa lettermani	b252	a154	a160	42	84	48	52	6.78	9.46
Total for Annual Grasses		0	0	0	0	0	0	0	0	0
Total for Perennial Grasses		756	691	652	96	260	234	236	22.01	26.90
Total for Grasses		756	691	652	96	260	234	236	22.01	26.90
F	Antennaria rosea	b6	a-	ab4	-	3	-	2	-	.30
F	Androsace septentrionalis (a)	-	b31	a-	-	-	14	-	.27	-
F	Arabis drummondi	a1	b16	a-	-	1	7	-	.06	-
F	Astragalus convallarius	1	4	-	9	1	1	-	.00	-
F	Astragalus spp.	4	-	-	-	2	-	-	-	-
F	Castilleja flava	a-	b10	a-	-	-	5	-	.33	-
F	Calochortus nuttallii	-	3	-	-	-	1	-	.00	-
F	Chenopodium album (a)	-	b42	a-	-	-	16	-	.15	-
F	Chaenactis douglasii	b34	b20	a6	-	15	12	2	.13	.03
F	Comandra pallida	a186	b250	a186	31	70	86	65	3.52	3.40
F	Collinsia parviflora (a)	-	a-	b40	-	-	-	17	-	.77
F	Crepis acuminata	a3	b76	a4	-	1	35	2	.37	.06
F	Cymopterus longipes	-	-	3	-	-	-	1	-	.00
F	Delphinium nuttallianum	-	1	-	-	-	1	-	.00	-
F	Eriogonum alatum	a-	a2	b14	-	-	1	8	.00	.21
F	Erigeron eatonii	b19	b8	a-	-	8	4	-	.07	-
F	Eriogonum umbellatum	a35	b70	a34	2	15	33	18	1.72	.45
F	Geranium spp.	3	-	3	-	1	-	-	-	-
F	Hedysarum boreale	-	1	-	-	-	1	-	.00	-

Type	Species	Nested Frequency			Quadrat Frequency				Average Cover %	
		'88	'95	'00	'82	'88	'95	'00	'95	'00
F	<i>Heterotheca villosa</i>	-	-	3	-	-	-	1	-	.03
F	<i>Hymenoxys acaulis</i>	a-	b19	b12	-	-	10	6	.32	.15
F	<i>Ipomopsis aggregata</i>	b8	ab3	a-	-	3	2	-	.03	-
F	<i>Linum lewisii</i>	a-	b21	b10	-	-	10	5	.27	.10
F	<i>Lithospermum ruderales</i>	a-	b8	ab5	-	-	5	2	.19	.06
F	<i>Lupinus argenteus</i>	b67	a25	a8	30	33	12	6	.65	.55
F	<i>Lychnis</i> spp.	2	-	-	-	1	-	-	-	-
F	<i>Machaeranthera canescens</i>	c31	b4	a-	-	15	4	-	.07	-
F	<i>Oenothera lavandulaefolia</i>	a-	b22	b9	-	-	9	5	.98	.05
F	<i>Penstemon caespitosus</i>	a-	b21	a3	-	-	9	2	.58	.01
F	<i>Penstemon comarrhenus</i>	b50	a27	a18	-	30	14	9	.36	.31
F	<i>Penstemon watsonii</i>	b73	b84	a13	-	30	35	6	1.38	.27
F	<i>Physaria acutifolia</i>	a-	b9	ab4	-	-	5	2	.08	.03
F	<i>Phlox longifolia</i>	b86	a20	a4	-	45	10	2	.10	.06
F	<i>Polygonum douglasii</i> (a)	-	b51	a-	-	-	19	-	.22	-
F	<i>Potentilla gracilis</i>	a-	b8	b9	-	-	4	4	.07	.02
F	<i>Schoenocrambe linifolia</i>	-	-	1	-	-	-	1	-	.00
F	<i>Tragopogon dubius</i>	-	3	-	-	-	1	-	.03	-
F	Unknown forb-perennial	b20	a-	a-	-	10	-	-	-	-
Total for Annual Forbs		0	124	40	0	0	49	17	0.64	0.76
Total for Perennial Forbs		629	735	350	75	284	317	149	11.41	6.15
Total for Forbs		629	859	390	75	284	366	166	12.06	6.92

Values with different subscript letters are significantly different at $\alpha = 0.10$

BROWSE TRENDS --

Herd unit 11A, Study no: 3

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia nova	2	0	-	-
B	Artemisia tridentata vaseyana	40	69	1.45	7.04
B	Chrysothamnus depressus	7	15	.16	.39
B	Chrysothamnus viscidiflorus lanceolatus	83	82	4.86	4.06
B	Gutierrezia sarothrae	2	1	.01	.00
B	Opuntia spp.	4	2	.03	-
B	Symphoricarpos oreophilus	24	9	2.28	.21
B	Tetradymia canescens	12	17	.83	.39
Total for Browse		174	195	9.63	12.10

BASIC COVER --

Herd unit 11A, Study no: 3

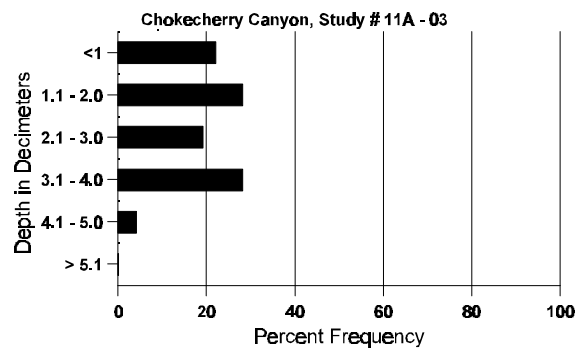
Cover Type	Nested Frequency		Average Cover %			
	'95	'00	'82	'88	'95	'00
Vegetation	379	368	12.50	23.00	45.31	50.65
Rock	252	143	2.00	5.50	8.19	5.89
Pavement	136	271	4.75	2.50	1.29	10.82
Litter	396	379	55.75	53.75	47.58	49.29
Cryptogams	2	-	0	0	.63	0
Bare Ground	308	281	25.00	15.25	12.67	26.07

SOIL ANALYSIS DATA --

Herd Unit 11A, Study # 3, Study Name: Chokecherry Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
13.54	56.2 (14.65)	6.9	32.9	33.8	33.2	4.3	11.8	217.6	0.9

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 11A, Study no: 3

Type	Quadrat Frequency	
	'95	'00
Rabbit	4	3
Elk	27	46
Deer	3	9
Cattle	-	1

Pellet Transect	
Pellet Groups per Acre 00	Days Use per Acre (ha) 00
157	N/A
1096	84 (208)
148	11 (28)
9	1 (2)

BROWSE CHARACTERISTICS --

Herd unit 11A, Study no: 3

Artemisia nova																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	2	-	1	-	-	-	-	-	-	-	-	-	-	60	5	7	3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'82		00%				00%				00%								
'88		00%				00%				00%								
'95		00%				17%				00%								
'00		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)														'82	0	Dec:	0%	
														'88	0		0%	
														'95	120		33%	
														'00	0		0%	

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia tridentata vaseyana																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	95	48	-	-	-	-	-	-	-	-	48	-	-	-	960		48	
	00	8	-	-	-	-	-	-	-	-	8	-	-	-	160		8	
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	9	-	-	-	-	-	-	-	-	9	-	-	-	600		9	
	95	33	8	-	-	-	-	-	-	-	41	-	-	-	820		41	
	00	144	-	-	1	-	-	-	-	-	145	-	-	-	2900		145	
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	88	1	2	-	-	-	-	-	-	-	3	-	-	-	200	11	3	
	95	19	12	-	-	-	-	1	-	-	30	2	-	-	640	16	32	
	00	114	33	-	-	-	-	-	-	-	139	-	5	3	2940	14	147	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	1	-	-	-	1	-	-	-	1	-	1	-	40		2	
	00	6	2	-	-	-	-	-	-	-	7	-	-	1	160		8	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	240		12	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	460		23	
% Plants Showing		Moderate Use			Heavy Use			Poor Vigor			%Change							
		'82			00%			00%										
		'88			17%			00%			+47%							
		'95			28%			01%			+75%							
		'00			12%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	0%			
												'88	800		0%			
												'95	1500		3%			
												'00	6000		3%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus depressus																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	13	4	-	-	-	-	-	-	17	-	-	-	340	3	9	17
	00	27	20	-	-	-	-	-	-	-	47	-	-	-	940	2	5	47
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	00	-	1	-	-	-	-	-	-	-	1	-	-	-	20			1
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	140			7
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			00%			00%										
		'88			00%			00%										
		'95			72%			22%			+63%							
		'00			44%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:		0%		
												'88	0			0%		
												'95	360			6%		
												'00	960			2%		

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Chrysothamnus viscidiflorus lanceolatus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	4	-	-	-	-	-	-	-	-	3	-	1	-			266	4
	95	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-			20	1
Y	82	8	-	-	-	-	-	-	-	-	8	-	-	-	533		8	
	88	75	3	-	-	-	-	-	-	-	63	-	15	-	5200		78	
	95	83	-	-	-	-	-	-	-	-	83	-	-	-	1660		83	
	00	32	-	-	-	-	-	-	-	-	32	-	-	-	640		32	
M	82	48	-	-	-	-	-	-	-	-	48	-	-	-	3200	12	18	48
	88	41	2	-	-	-	-	-	-	-	41	-	2	-	2866	13	14	43
	95	296	104	-	-	-	-	-	-	-	400	-	-	-	8000	9	13	400
	00	215	11	7	-	-	-	-	-	-	233	-	-	-	4660	8	11	233
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	12	5	-	-	-	-	-	-	-	16	-	1	-	1133		17	
	95	-	-	-	-	-	-	-	-	-	-	-	-	0	0			
	00	15	4	6	-	-	-	-	-	-	20	-	1	4	500		25	
X	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+59%							
'88		07%			00%			13%			+ 5%							
'95		22%			00%			00%			-40%							
'00		05%			04%			02%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	3733	Dec:	0%			
												'88	9199		12%			
												'95	9660		0%			
												'00	5800		9%			
Gutierrezia sarothrae																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-			20	1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-			0	0
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20	3	5	1
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80	4	4	4
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			+50%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	40		-			
												'00	80		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia spp.																		
M	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	4	-	-	-	-	-	-	-	-	-	4	-	-	80	4	15	4
	00	1	-	-	1	-	-	-	-	-	-	2	-	-	40	3	10	2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%										
'88		00%			00%			00%										
'95		00%			00%			00%			-50%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	0	Dec:	-			
												'88	0		-			
												'95	80		-			
												'00	40		-			
Symphoricarpos oreophilus																		
S	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	2	-	-	-	-	-	-	-	-	-	2	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	5	5	2	-	-	-	-	-	-	-	12	-	-	800			12
	95	6	-	-	1	-	-	-	-	-	-	7	-	-	140			7
	00	5	-	-	-	-	-	-	-	-	-	5	-	-	100			5
M	82	4	-	-	-	-	-	-	-	-	-	4	-	-	266	12	21	4
	88	-	5	-	-	-	-	-	-	-	-	5	-	-	333	15	26	5
	95	10	1	15	3	-	19	-	-	-	-	40	8	-	960	13	28	48
	00	1	-	-	-	-	-	-	-	-	-	1	-	-	20	11	20	1
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	88	-	1	-	-	-	-	-	-	-	-	1	-	-	66			1
	95	-	2	-	-	-	-	2	-	-	-	4	-	-	80			4
	00	3	-	-	-	-	-	1	-	-	-	4	-	-	80			4
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'82		00%			00%			00%			+78%							
'88		61%			11%			00%			- 2%							
'95		05%			58%			00%			-83%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'82	266	Dec:	0%			
												'88	1199		6%			
												'95	1180		7%			
												'00	200		40%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Tetradymia canescens																		
Y	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	1	-	-	-	-	-	-	-	-	-	1	-	-	66		1	
	95	2	-	-	-	-	-	-	-	-	-	2	-	-	40		2	
	00	1	2	-	-	-	-	-	-	-	-	3	-	-	60		3	
M	82	2	-	-	-	-	-	-	-	-	-	2	-	-	133	7 11	2	
	88	1	1	-	-	-	-	-	-	-	-	2	-	-	133	11 12	2	
	95	2	17	-	-	-	-	-	-	-	-	19	-	-	380	9 13	19	
	00	1	8	4	-	2	4	-	-	-	-	19	-	-	380	7 12	19	
D	82	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	1	-	-	-	-	1	-	-	20		1	
	00	1	1	1	-	-	-	-	-	-	-	3	-	-	60		3	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
		'82			00%			00%			+33%							
		'88			33%			00%			+55%							
		'95			77%			05%			+12%							
		'00			52%			36%			00%							
Total Plants/Acre (excluding Dead & Seedlings)												'82	133	Dec:	0%			
												'88	199		0%			
												'95	440		5%			
												'00	500		12%			

Trend Study 11A-4-00

Study site name: Cottonwood Canyon.

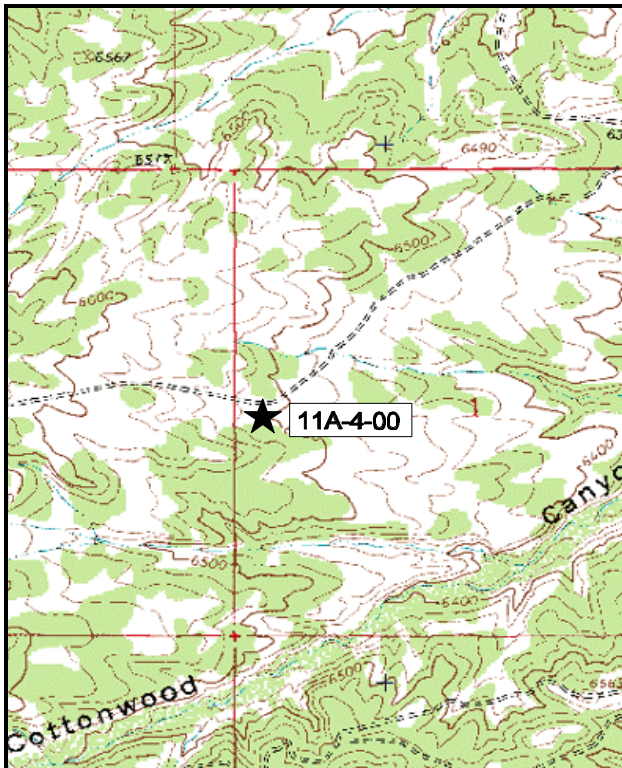
Range type: Salt Desert Shrub.

Compass bearing: frequency baseline 151°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Belt 4 no rebar.

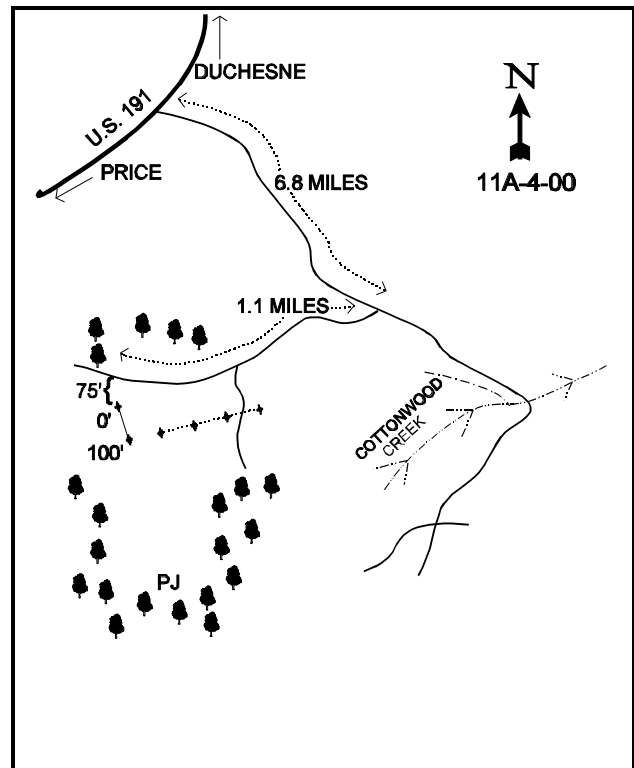
LOCATION DESCRIPTION

From Duchesne, go up Indian Canyon approximately 2.5 miles to the Cottonwood - Sower Canyon Road. Turn left and to the southeast on the main road 6.8 miles to a jeep trail on top of the ridge just before Cottonwood Creek. Turn right on the jeep trail and drive 1 mile west to a fork. Continue approximately 0.1 miles up the right fork to the study site. The 0-foot baseline stake is 15 paces south of the road in the sage/grass type. The study is marked with 12 inch tall fenceposts. The 0-foot baseline stake is marked with browse tag #9037. The baseline is interrupted between the first and second lines.



Map Name: Duchesne SW

Township 5S, Range 5W, Section 1



Diagrammatic Sketch

UTM 4436057 N, 550778.721 E

DISCUSSION

Trend Study No. 11A-4 (15-4)

The Cottonwood Canyon trend study samples winter range on the long slope down from Anthro Mountain and the Badland Cliffs to the Duchesne River. The study is in a mixed shrub/grass community on a 2%, east facing slope surrounded by pinyon-juniper woodland. The site is located on a DWR wildlife management area at an elevation of 6,500 feet. The unit is surrounded by BLM and Ute tribal lands. A pellet group transect read near the baseline in 2000 estimates light use by deer (15 deer days use/acre, 37 ddu/ha) and moderate use by elk (59 elk days use/acre, 146 edu/ha). No cattle pats were sampled in 2000. Antelope also utilize the site but sign was relatively infrequent.

The clay loam soil is moderately deep with an estimated effective rooting depth of over 27 inches. The soil reaction is slightly alkaline (pH of 7.5). A stoniness index estimated from penetrometer readings shows the majority of probes to be 16 inches or deeper in the profile. However, these readings were more a measure of compaction than rock, as very little rock was contacted within the profile. Soil erosion is not a significant problem on the site, although some soil loss is evident in the interspaces resulting in some pedestalling around shrubs. Erosion is more severe in the surrounding pinyon-juniper woodland type. Rock and pavement cover values combined are estimated at nearly 9%. Vegetative cover is estimated at 31% in 1995, decreasing to about 29% in 2000. The main negative factor influencing the soil at this site is the sudden increase of bare ground cover in 2000.

Fringed sagebrush is the most abundant browse species and it accounted for 42% of the browse cover in 2000. Estimated population density of fringed sagebrush is currently 8,680 plants/acre, a decrease of nearly half the estimated number in 1995. Percent decadency also increased to 21%. The dry year in 2000 is most likely the cause of the decrease in density and increase in percent decadency. Plants in poor vigor increased from zero in 1995 to 42% in 2000. Shadscale currently ('00) provides as much cover as fringed sagebrush and has an estimated density of 1,740 plants/acre. Vigor was mostly good in 1995, but in 2000, 53% of the population displayed poor vigor. Percent decadency was low in 1995 at 10%, this drastically increased to 70% in 2000. Use was moderate to heavy in 2000. Winterfat shows many of the same changes as shadscale in 2000. Percent decadency and poor vigor on winterfat increased from 0% in 1995 to 63% in 2000. Also, 52% of the population were classified as having heavy use in 2000. The level of use may have been overestimated due to the dry conditions yielding very little annual growth. These downward changes in key browse parameters are mostly due to the drought experienced in 2000 and should improve with better precipitation in the future. Both winterfat and shadscale have a higher proportion of decadent, dying plants than young plants. This should be watched in the future for possible population losses. Other browse species that are present, but in low abundance include: bud sage, black sagebrush, basin big sagebrush, Wyoming big sagebrush, fourwing saltbush, rabbitbrush, broom snakeweed and prickly pear.

Grasses provided 62% of the total vegetative cover in 1995, increasing to 84% in 2000. Needle-and-thread, thickspike wheatgrass and blue grama are the dominant species which provide nearly all of the grass cover. Needle-and-thread and thickspike remained at stable frequencies in 2000, while blue grama significantly decreased. Blue grama is a warm season species and this decrease is not surprising with the extremely dry conditions in 2000, especially in the summer. Other grasses include: Indian ricegrass, bottlebrush squirreltail and galleta. Cheatgrass was sampled in one quadrat in 1995, but was not sampled in 2000. Sum of nested frequency of grasses has been stable over all sampling periods and only decreasing slightly in 2000 with the dry conditions. In 1995, forbs were dominated by annual species which included woolly navarretia, Fremont goosefoot, slimleaf goosefoot, annual stickweed and tansy mustard. However, no annual forbs were sampled in 2000 due to drought. Sum of nested frequency of all forbs declined from 430 in 1995 to 22 in 2000. Total cover for forbs has never really exceeded 3% in any year. Perennial forbs have been very scarce in all years.

1988 APPARENT TREND ASSESSMENT

The grasses are quite competitive. Forb density and diversity is predictably low. The grasses provide significant ground cover. Most of the vegetative ground cover is provided by mats of blue grama and numerous western wheatgrass stems which together provide excellent erosion control. There is also a significant amount of pavement cover (25%).

1995 TREND ASSESSMENT

The soil shows little sign of erosion due to the abundance of herbaceous vegetation and litter cover. Soil trend is stable. Fringed sagebrush density is high and the plants have become more robust since 1988. The most preferred forage species are found in moderate densities with mostly moderate hedging and nearly the same height and crown measurements. The exception is winterfat which doubled in size (height and crown). Other invasive species are in low abundance and do not appear to be increasing. The browse trend is stable, although there is a dense population of fringed sagebrush. Sum of nested frequency for perennial grasses has stayed nearly the same with only a single occurrence of cheatgrass. Perennial forb sum of nested frequency has increased, but the forbs are still proportionally dominated by annual species. Grasses contribute the most to the herbaceous understory. This leads to a stable herbaceous understory at this time, although there is poor forb composition.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

2000 TREND ASSESSMENT

Trend for soil is slightly down with a large increase of bare ground and evident soil loss in the interspaces. The ratio of protective ground cover to bare soil decreased as well. The large increase in bare ground is the result of the drought experienced in 2000. Trend for browse is down as shadscale and winterfat show drastic increases in poor vigor and percent decadency. Estimated use increased on these species in 2000, but this may be overestimated due to these species appearing heavily used because of low annual growth with drought. Although sum of nested frequency of perennial grasses and forbs slightly decreased in 2000, trend is considered stable. Most of the loss in frequency is from perennial forbs which have been in low abundance in all years. Currently, forbs only contribute 0.1% cover. Perennial grasses are the dominant component in the herbaceous understory and remained at nearly the same sum of nested frequency as the previous reading.

TREND ASSESSMENT

soil - slightly down (2)

browse - down (1)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 11A, Study no: 4

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	_a 179	_b 255	_b 279	64	80	92	6.46	5.86
G	Agropyron spicatum	-	4	-	-	2	-	.04	-
G	Bouteloua gracilis	_c 298	_b 190	_a 152	89	67	55	4.76	4.83
G	Bromus tectorum (a)	-	1	-	-	1	-	.00	-
G	Hilaria jamesii	-	-	-	-	-	-	.00	-
G	Oryzopsis hymenoides	_a 12	_b 44	_{ab} 21	6	19	13	1.10	.51
G	Sitanion hystrix	15	15	36	9	8	13	.09	.84
G	Stipa comata	190	167	172	81	63	67	5.62	9.39
Total for Annual Grasses		0	1	0	0	1	0	0.00	0
Total for Perennial Grasses		694	675	660	249	239	240	18.09	21.44
Total for Grasses		694	676	660	249	240	240	18.09	21.44
F	Astragalus purshii	_a -	_b 6	_a -	-	3	-	.01	-
F	Chenopodium fremontii (a)	-	_b 77	_a -	-	37	-	.55	-
F	Chenopodium leptophyllum (a)	-	_b 66	_a -	-	30	-	.23	-
F	Cryptantha spp.	5	4	-	3	2	-	.01	-
F	Descurainia pinnata (a)	-	_b 38	_a -	-	17	-	.39	-
F	Lappula occidentalis (a)	-	_b 32	_a -	-	15	-	.32	-
F	Machaeranthera grindelioides	-	3	-	-	1	-	.00	-
F	Navarretia intertexta (a)	-	_b 135	_a -	-	65	-	1.06	-
F	Orthocarpus luteus (a)	3	-	-	1	-	-	-	-
F	Phlox austromontana	3	-	5	1	-	2	-	.03
F	Schoenocrambe linifolia	_a 1	_b 48	_a 5	1	24	2	.31	.01
F	Sphaeralcea coccinea	9	15	8	7	9	4	.09	.04
F	Taraxacum officinale	-	2	-	-	1	-	.00	-
F	Townsendia incana	-	4	4	-	2	2	.01	.01
F	Tragopogon dubius	2	-	-	1	-	-	-	-
Total for Annual Forbs		3	348	0	1	164	0	2.56	0
Total for Perennial Forbs		20	82	22	13	42	10	0.45	0.10
Total for Forbs		23	430	22	14	206	10	3.02	0.10

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 11A, Study no: 4

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia frigida	93	87	1.34	1.63
B	Artemisia nova	5	3	-	.15
B	Artemisia spinescens	15	1	.19	.18
B	Artemisia tridentata wyomingensis	1	1	-	-
B	Atriplex confertifolia	62	49	4.85	1.62
B	Ceratoides lanata	29	27	1.56	.30
B	Chrysothamnus viscidiflorus viscidiflorus	1	2	-	-
B	Gutierrezia sarothrae	4	2	.15	-
B	Opuntia spp.	1	0	-	-
B	Pediocactus simpsonii	2	0	-	-
Total for Browse		213	172	8.10	3.89

BASIC COVER --

Herd unit 11A, Study no: 4

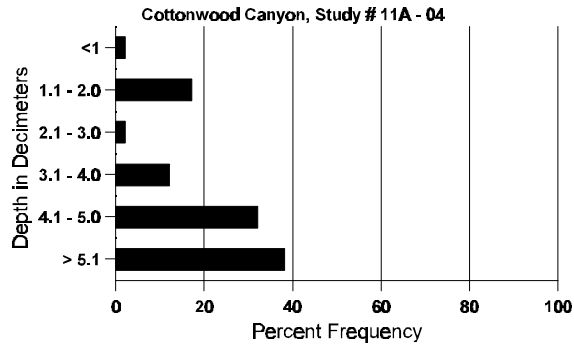
Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'88	'95	'00
Vegetation	344	347	23.50	31.20	28.95
Rock	135	32	0	.91	.08
Pavement	322	325	24.75	7.81	8.63
Litter	394	376	30.50	28.26	29.41
Cryptogams	194	111	.25	4.27	1.81
Bare Ground	343	362	21.00	20.09	39.95

SOIL ANALYSIS DATA --

Herd Unit 11A, Study # 4, Study Name: Cottonwood Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	% sand	% silt	% clay	% OM	PPM P	PPM K	dS/m
27.32	60.0 (18.11)	7.5	36.9	34.8	28.3	1.9	8.7	233.6	0.7

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 11A, Study no: 4

Type	Quadrat Frequency	
	'95	'00
Rabbit	26	36
Elk	15	28
Deer	13	7
Cattle	2	-

Pellet Transect	
Pellet Groups per Acre 00	Days Use per Acre (ha) 00
731	N/A
766	59 (146)
200	15 (37)
-	-

BROWSE CHARACTERISTICS --

Herd unit 11A, Study no: 4

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Artemisia frigida																	
S	88	4	-	-	-	-	-	3	-	-	7	-	-	-	466		7
	95	146	-	-	-	-	-	-	-	-	146	-	-	-	2920		146
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1
Y	88	56	-	-	4	-	-	9	-	-	68	-	1	-	4600		69
	95	485	-	-	-	-	-	-	-	-	485	-	-	-	9700		485
	00	25	48	-	-	-	-	-	-	-	55	1	11	6	1460		73
M	88	76	-	-	15	-	-	4	-	-	89	-	5	1	6333	6 4	95
	95	207	16	-	5	-	-	-	-	-	228	-	-	-	4560	15 9	228
	00	240	28	1	-	-	-	-	-	-	169	2	93	5	5380	2 4	269
D	88	15	-	-	-	-	-	-	-	-	4	-	8	3	1000		15
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	77	14	1	-	-	-	-	-	-	25	-	19	48	1840		92
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	200		10
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'88		00%			00%			10%			+16%						
'95		02%			00%			00%			-39%						
'00		21%			.46%			42%									
Total Plants/Acre (excluding Dead & Seedlings)														'88	11933	Dec:	8%
														'95	14260		0%
														'00	8680		21%
Artemisia nova																	
Y	88	2	-	-	1	-	-	-	-	-	3	-	-	-	200		3
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	- -	0
	95	3	5	-	-	-	-	-	-	-	8	-	-	-	160	13 18	8
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6 21	0
D	88	1	-	-	-	-	-	-	-	-	-	-	-	1	66		1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	2	-	5	-	1	-	-	-	-	-	-	-	8	160		8
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'88		00%			00%			25%			-40%						
'95		63%			00%			00%			+ 0%						
'00		13%			63%			100%									
Total Plants/Acre (excluding Dead & Seedlings)														'88	266	Dec:	25%
														'95	160		0%
														'00	160		100%

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia spinescens																		
Y	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	95	-	-	1	-	-	-	-	-	-	1	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	88	16	-	-	1	-	-	4	-	-	20	-	1	-	1400	5	6	
	95	-	6	15	-	-	-	-	-	-	21	-	-	-	420	6	12	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	13	
D	88	9	-	-	-	-	-	-	-	-	5	-	1	3	600		9	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			14%			-81%							
'95		27%			73%			00%			-95%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	2333	Dec:	26%			
												'95	440		0%			
												'00	20		0%			
Artemisia tridentata wyomingensis																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	-	1	-	-	-	-	-	-	-	1	-	-	-	20	17	26	
	00	-	-	1	-	-	-	-	-	-	-	-	1	-	20	21	40	
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	1	-	-	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'95		100%			00%			00%			+50%							
'00		00%			100%			100%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	0%			
												'95	20		0%			
												'00	40		50%			
Atriplex canescens																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	18	31	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'95	0		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Atriplex confertifolia																		
S	88	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	88	11	-	-	1	-	-	1	-	-	13	-	-	-	866		13	
	95	1	1	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	88	22	3	-	-	-	-	-	-	-	25	-	-	-	1666	13	18	
	95	84	7	2	-	-	-	-	-	-	93	-	-	-	1860	13	23	
	00	4	6	5	1	5	4	1	-	-	25	1	-	-	520	8	17	
D	88	22	3	-	-	-	-	-	-	-	24	-	-	1	1666		25	
	95	8	2	-	-	-	-	-	-	-	5	-	-	5	200		10	
	00	2	15	30	-	1	3	10	-	-	15	-	8	38	1220		61	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	340		17	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	520		26	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		10%			00%			02%			-50%							
'95		10%			02%			05%			-17%							
'00		31%			48%			53%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	4198	Dec:	40%			
												'95	2100		10%			
												'00	1740		70%			
Ceratoides lanata																		
S	88	1	-	-	-	-	-	1	-	-	2	-	-	-	133		2	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	88	22	2	1	3	-	-	8	-	-	36	-	-	-	2400		36	
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60		3	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	88	9	6	-	2	-	-	1	-	-	18	-	-	-	1200	6	6	
	95	39	27	1	1	-	-	-	-	-	68	-	-	-	1360	12	11	
	00	6	-	6	-	-	6	-	-	-	13	-	5	-	360	3	5	
D	88	9	-	1	-	-	-	-	-	-	7	-	1	2	666		10	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	10	16	-	6	-	-	-	-	5	-	11	18	680		34	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	140		7	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		13%			03%			05%			-67%							
'95		38%			01%			00%			-24%							
'00		30%			52%			63%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	4266	Dec:	16%			
												'95	1420		0%			
												'00	1080		63%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Chrysothamnus viscidiflorus viscidiflorus																		
Y	88	20	-	-	-	-	-	1	-	-	21	-	-	-	1400		21	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	88	9	-	-	-	-	-	-	-	-	9	-	-	-	600	7	4	
	95	-	-	-	1	-	-	-	-	-	1	-	-	-	20	10	12	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	2	4	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%			-99%							
'95		00%			00%			00%			+50%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	2000	Dec:	-			
												'95	20		-			
												'00	40		-			
Gutierrezia sarothrae																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	88	-	-	-	-	-	-	1	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	
	95	6	-	-	-	-	-	-	-	-	6	-	-	-	120	10	12	
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20	4	6	
D	88	2	-	-	-	-	-	1	-	-	2	-	-	1	200		3	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			25%			-55%							
'95		00%			00%			00%			-50%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	266	Dec:	75%			
												'95	120		0%			
												'00	60		67%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Opuntia spp.																		
M	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66	4	12	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	14	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	3	10	0
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%			-70%							
'95		00%			00%			100%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	66	Dec:	0%			
												'95	20		100%			
												'00	0		0%			
Pediocactus simpsonii																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	1	2	3
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'95		00%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'95	60		-			
												'00	0		-			

Trend Study 11A-5-00

Study site name: Nutters Canyon.

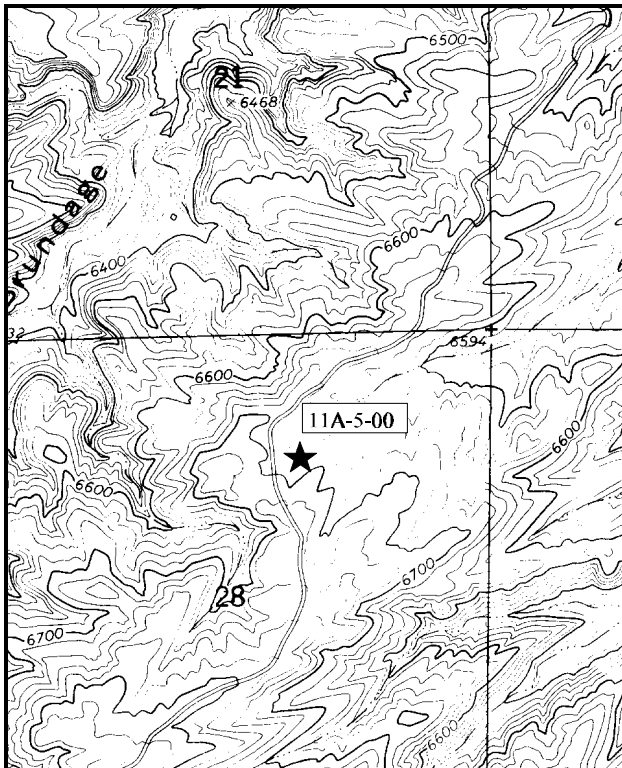
Range type: Black Sagebrush.

Compass bearing: frequency baseline 206°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Belt 3 rebar @ 2ft.

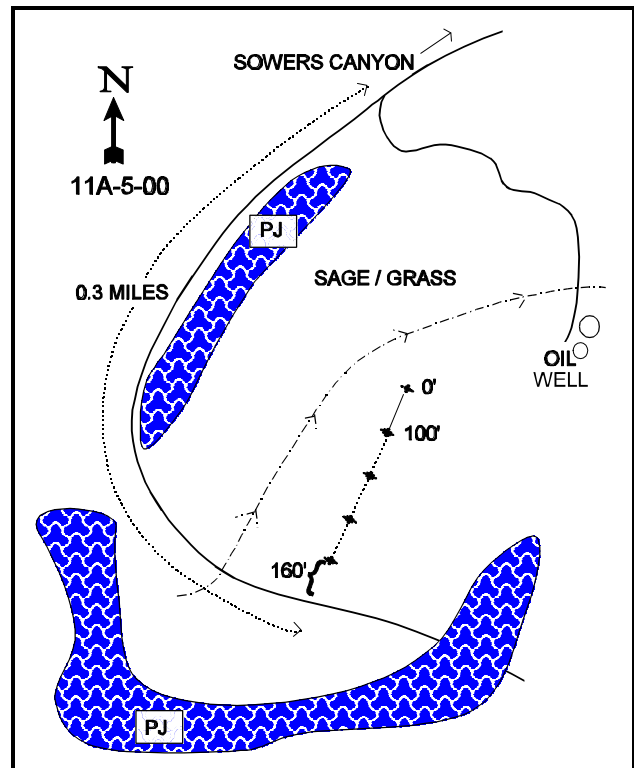
LOCATION DESCRIPTION

From Highway U.S. 40 near Bridgeland, turn south and go up the Anthro Mountain-Sower Canyon Road 8.6 miles to the turnoff to Nutters Ridge by an old cabin and an oil well. Turn left and go 4.5 miles up the ridge on the main road (stay left at major forks) to another fork to an oil well. Bear right and continue 0.3 miles to where the road curves and crosses a small drainage. Stop before you drive back into the P-J and walk down into the sage opening about 180 feet to the 400-foot baseline stake. The 0-foot baseline stake is marked with browse tag #9035. The study is marked by green fenceposts approximately 18 inches tall.



Map Name: Duchesne SE

Township 5S, Range 4W, Section 28



Diagrammatic Sketch

UTM 4430200.986 N, 556570.209 E

DISCUSSION

Trend Study No. 11A-5 (15-5)

The Nutters Canyon trend study is located above Nutters Canyon in the middle of a sagebrush/grass swale surrounded by pinyon-juniper woodland. Natural sagebrush/grass openings are found within the heads of most drainages. This swale drains to the east-northeast and has a north aspect. The study has a slope of 3-5% at an elevation of approximately 6,600 feet. There are roads along most of the main ridges, plus spur roads going to numerous oil wells within the area. Cattle grazing is of relatively minor use on this Ute Reservation land. The area receives light to moderate use from deer, elk and antelope. A pellet group transect read along the baseline in 2000 estimates 5 deer days use/acre(12 ddu/ha) and 40 elk days use/acre (99 edu/ha).

Soils at the site are loamy in texture and slightly alkaline (pH of 7.4). Soil depth is moderate with an estimated effective rooting depth of nearly 18 inches. Rocks are fairly uniformly distributed throughout the profile as illustrated by the stoniness index estimated from penetrometer readings. Erosion appears light at this time, although vegetation and litter cover are not particularly abundant. Pavement is high at 44% in 2000, with the bare soil cover value low, at less than 10%. Pedestaling is slight around the base of sagebrush plants. Phosphorus is low at 6.6 ppm as values less than 10 ppm may limit normal plant growth and development.

The sagebrush is classified as black sagebrush, although there appears to be some hybridization between mountain big sagebrush and black sagebrush. Along the edge of the pinyon-juniper type and along the drainage bottom, there are shrubs more characteristic of mountain big sagebrush. Black sagebrush provided 16% average cover in both 1995 and 2000 or over 90% of the total browse cover in both years. The population had an estimated density of 12,100 plants/acre in 2000, with most of the population being either mature (58%) or decadent (39%). The decadency rate is an increase from 12% in 1995, and is most likely due to the drought experienced statewide in 2000. Nearly one-third (31%) of the decadent plants were classified as dying in 2000, representing about 1,460 plants/acre that could be lost from the population in the future. Recruitment from young plants is currently low at 3%, a decrease from 17% in 1995 and 42% in 1988. This current low recruitment level is not adequate to replace those individuals in the population classified as dying. A return to normal precipitation patterns could increase recruitment and decrease percent decadency. Biotic potential (proportion of seedlings to the population) remains low at 2%. Black sagebrush shows moderate to heavy hedging with 32% and 35% of the plants classified as heavily hedged in 1995 and 2000 respectively. The proportion of the population displaying poor vigor increased from 5% in both 1988 and 1995, to 13% in 2000. Once again, this increase is most likely drought caused and should improve with normal precipitation. Leader growth on black sagebrush was minimal in 2000. Other browse on the site include: winterfat, shadscale, fringed sagebrush, stickyleaf low rabbitbrush and snakeweed. These species have low densities and combine to provide just over 1% average cover.

The herbaceous understory is dominated by perennial grasses. Blue grama, bottlebrush squirreltail and needle-and-thread grass were nearly equal in frequency and cover in 2000. Each of these species increased in average cover and nested frequency in 2000, except for needle-and-thread which increased in average cover but significantly decreased in nested frequency. Other perennial species sampled at the site but occur infrequently include: thickspike wheatgrass, galleta, Indian ricegrass and Sandberg bluegrass. As a group, perennial grasses slightly decreased in sum of nested frequency in 2000. However, with the extremely dry conditions, this decrease was not significant.

Forbs have provided very little vegetative cover on this site during all sampling periods and especially in 2000. Due to drought in 2000, forbs are nearly non-existent with only four species being sampled. Currently ('00), all forbs combined provide only 1/100 of 1% average cover. Sum of nested frequency for forbs declined from 368 in 1995 to only 6 in 2000, with over half of this decline being from perennial species.

1988 APPARENT TREND ASSESSMENT

Grasses provide considerable litter cover at this site (44%). Decomposition is relatively slow with the soil containing very little organic matter. Pavement contributes 33% of the ground cover. With the 11% vegetative cover provided by the grasses, total ground cover is adequate with only 11% of the surface exposed as bare soil.

1995 TREND ASSESSMENT

Percent bare ground is low, while pavement cover is extremely high. Although pavement does protect from rain drop impact, it also can accelerate runoff across the ground. Percent bare ground has decreased and pavement cover has increased. This increase in pavement could have been a differing interpretation of what pavement is on the site, as there is little current evidence of soil movement. The majority of the soil loss most likely occurred in the past. As a result, soil trend is stable. The black sagebrush population appears to be shifting to a more mature population at this time with 8% of the population was classified as dead. Hedging is moderate to heavy with height staying nearly the same and the crown measurements increasing by 6 inches. There is low biotic potential which is due to drought conditions over the past several years. Other increaser species such as broom snakeweed, sticky leaf rabbitbrush and fringed sagebrush appear to have stable populations with low densities. Browse trend is stable. Sum of nested frequency for perennial grasses has greatly decreased while there was a great increase in perennial forb sum of nested frequency. Many forbs are annual species and account for high amounts of cover and nested frequency values. Because of the large decrease in perennial grass, herbaceous understory trend is slightly downward.

TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - slightly downward (2)

2000 TREND ASSESSMENT

Trend for soil is stable. Ground cover characteristics are similar to previous levels, with vegetation and bare ground slightly increasing and litter and pavement cover slightly decreasing. Erosion still appears to be minimal even with a large decrease in the abundance of forbs in 2000. The ratio of protective ground cover to bare soil decreased, however it remains adequate to minimize erosion at the present time. Trend for browse is slightly down. Black sagebrush shows increases in percent decadency and poor vigor and a decrease in recruitment from young plants. The proportion of decadent plants classified as dying is currently about 3½ times higher than the number of young plants in the population. These negative trends for black sagebrush are mostly drought related and should improve with normal precipitation. Trend for the herbaceous understory is slightly down overall due to drought. Perennial grasses slightly decreased in sum of nested frequency in 2000, while perennial forbs drastically decreased in sum of nested frequency.

TREND ASSESSMENT

soil - stable (3)

browse - slightly down (2)

herbaceous understory - slightly down (2)

HERBACEOUS TRENDS --
Herd unit 11A, Study no: 5

T y p e	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'88	'95	'00	'88	'95	'00	'95	'00
G	Agropyron dasystachyum	a ⁻	b ¹⁷	b ²⁰	-	7	10	.16	.05
G	Bouteloua gracilis	b ²⁰⁹	a ¹³⁹	a ¹⁵⁴	76	53	61	1.20	3.24
G	Hilaria jamesii	a ⁻	b ¹⁸	b ¹⁴	-	9	5	.24	.07
G	Oryzopsis hymenoides	10	8	6	6	5	4	.06	.07
G	Poa secunda	14	17	7	5	8	4	.11	.04
G	Sitanion hystrix	b ²²¹	a ¹⁵⁷	a ¹⁶⁵	86	65	67	2.01	3.34
G	Stipa comata	c ²⁸¹	b ¹⁷⁴	a ¹³⁶	93	70	48	2.88	4.56
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		735	530	502	266	217	199	6.67	11.38
Total for Grasses		735	530	502	266	217	199	6.67	11.38
F	Arabis perennans	a ⁻	b ¹⁸	a ⁻	-	8	-	.06	-
F	Astragalus purshii	a ⁻	b ⁵⁸	a ⁻	-	28	-	.19	-
F	Astragalus spp.	a ⁷	b ⁴⁴	a ⁻	2	21	-	.15	-
F	Chenopodium fremontii (a)	-	b ³⁵	a ⁻	-	18	-	.23	-
F	Chenopodium leptophyllum (a)	-	3	-	-	2	-	.01	-
F	Cryptantha spp.	-	1	-	-	1	-	.00	-
F	Descurainia pinnata (a)	-	b ⁴⁸	a ⁻	-	21	-	.33	-
F	Eriogonum cernuum (a)	-	4	-	-	2	-	.01	-
F	Erigeron pumilus	-	3	-	-	1	-	.00	-
F	Lappula occidentalis (a)	-	b ⁴⁹	a ⁻	-	20	-	.20	-
F	Machaeranthera canescens	1	3	-	1	2	-	.01	-
F	Navarretia intertexta (a)	-	b ³²	a ⁻	-	19	-	.12	-
F	Orobancha spp.	-	1	-	-	1	-	.00	-
F	Phlox longifolia	a ⁻	b ³⁸	a ⁻	-	15	-	.07	-
F	Schoenocrambe linifolia	7	10	4	2	7	2	.03	.01
F	Sphaeralcea coccinea	b ³²	b ²⁰	a ²	18	11	2	.13	.01
F	Taraxacum officinale	-	1	-	-	1	-	.00	-
Total for Annual Forbs		0	171	0	0	82	0	0.91	0
Total for Perennial Forbs		47	197	6	23	96	4	0.68	0.01
Total for Forbs		47	368	6	23	178	4	1.60	0.01

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --

Herd unit 11A, Study no: 5

Type	Species	Strip Frequency		Average Cover %	
		'95	'00	'95	'00
B	Artemisia frigida	6	5	.01	.04
B	Artemisia nova	92	95	16.18	16.71
B	Artemisia tridentata vaseyana	1	0	-	-
B	Atriplex confertifolia	12	8	1.32	.71
B	Ceratoides lanata	10	6	.06	.00
B	Chrysothamnus nauseosus graveolens	3	2	.07	.00
B	Chrysothamnus viscidiflorus viscidiflorus	6	7	.01	.21
B	Gutierrezia sarothrae	10	23	.08	.28
B	Opuntia spp.	3	2	.00	.03
B	Pediocactus simpsonii	2	10	.00	.04
B	Pinus edulis	0	4	-	-
Total for Browse		145	162	17.76	18.05

BASIC COVER --

Herd unit 11A, Study no: 5

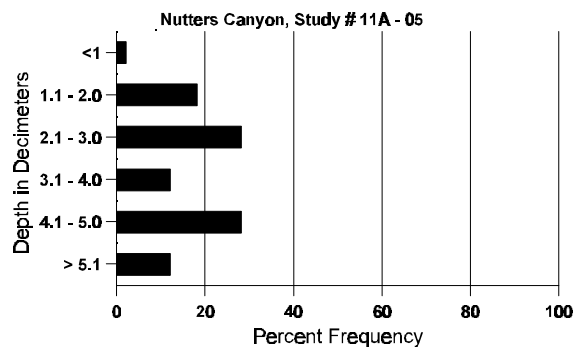
Cover Type	Nested Frequency		Average Cover %		
	'95	'00	'88	'95	'00
Vegetation	329	318	11.00	25.97	29.31
Rock	84	123	.50	.84	2.42
Pavement	357	362	33.00	47.27	44.26
Litter	371	341	44.50	25.42	19.22
Cryptogams	15	165	0	.05	2.71
Bare Ground	188	270	11.00	5.48	9.82

SOIL ANALYSIS DATA --

Herd Unit 11A, Study # 5, Study Name: Nutters Canyon

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
17.83	60.8 (18.11)	7.4	44.9	33.8	21.3	2.3	6.6	220.8	0.9

Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 11A, Study no: 5

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'95	'00	00	00
Rabbit	6	10	731	N/A
Elk	15	24	522	40 (99)
Deer	17	9	69	5 (13)

BROWSE CHARACTERISTICS --

Herd unit 11A, Study no: 5

A Y G R E		Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia frigida																		
S	88	18	-	-	-	-	-	-	-	-	18	-	-	-	1200			18
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	88	23	-	-	-	-	-	-	-	-	22	-	1	-	1533			23
	95	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	88	5	6	3	-	-	-	-	-	-	13	-	1	-	933	7	11	14
	95	5	-	-	-	-	-	-	-	-	5	-	-	-	100	12	10	5
	00	7	-	-	-	-	-	-	-	-	7	-	-	-	140	3	5	7
D	88	-	-	1	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>				
'88		16%				11%				05%				-91%				
'95		00%				00%				00%				-17%				
'00		00%				00%				00%								
Total Plants/Acre (excluding Dead & Seedlings)												'88	2532	Dec:	3%			
												'95	240		0%			
												'00	200		0%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Artemisia nova																		
S	88	76	-	-	1	-	-	11	-	-	87	-	1	-	5866		88	
	95	16	-	-	-	-	-	-	-	-	16	-	-	-	320		16	
	00	10	-	-	-	-	-	-	-	-	9	-	-	-	200		10	
Y	88	133	1	-	-	-	-	-	-	-	132	-	2	-	8933		134	
	95	28	48	13	1	-	-	-	-	-	90	-	-	-	1800		90	
	00	18	2	-	-	-	1	-	-	-	21	-	-	-	420		21	
M	88	102	32	1	-	-	-	-	-	-	132	-	3	-	9000	10 12	135	
	95	13	213	115	4	19	23	-	-	-	383	4	-	-	7740	11 18	387	
	00	239	15	71	9	2	15	-	-	-	340	4	3	4	7020	7 15	351	
D	88	38	9	-	-	-	-	-	-	-	37	-	4	6	3133		47	
	95	8	30	13	-	5	9	-	-	-	39	-	-	26	1300		65	
	00	22	66	121	10	5	5	4	-	-	160	-	-	73	4660		233	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	980		49	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	1160		58	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		13%			.31%			05%			-49%							
'95		58%			32%			05%			+10%							
'00		15%			35%			13%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	21066	Dec:	15%			
												'95	10840		12%			
												'00	12100		39%			
Artemisia tridentata vaseyana																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
	95	-	1	-	-	-	-	-	-	-	1	-	-	-	20	15 7	1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	0	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'95		100%			00%			00%										
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'95	20		-			
												'00	0		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Atriplex confertifolia																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	2	-	-	-	-	-	-	-	-	-	40		2	
M	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133	8	13	2
	95	16	-	-	-	-	-	-	-	-	16	-	-	-	320	16	29	16
	00	-	1	-	-	-	3	-	-	-	4	-	-	-	80	13	28	4
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	1	-	-	-	-	-	-	-	-	-	-	1	-	20		1	
	00	6	1	2	-	1	-	-	-	-	9	-	-	1	200		10	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%			+63%							
'95		00%			00%			06%			-11%							
'00		19%			31%			06%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	133	Dec:	0%			
												'95	360		6%			
												'00	320		63%			
Ceratoides lanata																		
Y	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200		3	
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	10	3	1	-	-	-	-	-	-	14	-	-	-	280	10	10	14
	00	-	-	4	-	1	-	-	-	-	4	1	-	-	100	3	3	5
D	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	-	-	-	-	1	-	-	-	-	-	-	-	1	20		1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%			+17%							
'95		19%			06%			00%			-63%							
'00		33%			67%			17%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	266	Dec:	25%			
												'95	320		0%			
												'00	120		17%			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total	
		1	2	3	4	5	6	7	8	9	1	2	3	4					
Chrysothamnus nauseosus graveolens																			
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	3	-	-	-	-	-	-	-	-	-	-	-	-	60			3	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0	
	95	12	-	-	-	-	-	-	-	-	-	-	-	-	240	9	11	12	
	00	1	-	-	-	-	-	-	-	-	-	-	-	-	20	11	6	1	
D	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	-	-	1	-	-	-	-	-	-	-	-	-	1	20			1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'88		00%			00%			00%											
'95		00%			00%			00%			-87%								
'00		00%			50%			50%											
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	0%				
												'95	300		0%				
												'00	40		50%				
Chrysothamnus viscidiflorus viscidiflorus																			
S	88	1	-	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	2	-	-	-	-	-	-	-	-	-	2	-	-	-	40		2	
M	88	1	-	-	-	-	-	-	-	-	-	1	-	-	-	66	3	2	1
	95	7	-	-	-	-	-	-	-	-	-	7	-	-	-	140	6	7	7
	00	5	-	-	-	-	-	-	-	-	-	3	2	-	-	100	2	7	5
D	88	1	-	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	6	-	-	-	-	4	-	-	-	-	-	-	10	200			10	
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>								
'88		00%			00%			00%			+ 6%								
'95		00%			00%			00%			+59%								
'00		00%			24%			59%											
Total Plants/Acre (excluding Dead & Seedlings)												'88	132	Dec:	50%				
												'95	140		0%				
												'00	340		59%				

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4				
Gutierrezia sarothrae																		
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	19	-	-	-	-	-	-	-	-	-	-	-	-	380		19	
	00	3	-	-	-	-	-	-	-	-	-	-	-	-	60		3	
Y	88	1	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
	00	5	-	-	1	-	-	-	-	-	6	-	-	-	120		6	
M	88	3	-	-	-	-	-	-	-	-	3	-	-	-	200	5	5	3
	95	10	-	-	1	-	-	-	-	-	11	-	-	-	220	7	6	11
	00	76	-	-	2	-	-	-	-	-	78	-	-	-	1560	3	5	78
X	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	40		2	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%			-10%							
'95		00%			00%			00%			+86%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	266	Dec:	-			
												'95	240		-			
												'00	1680		-			
Opuntia spp.																		
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	3	-	-	-	-	-	-	-	-	3	-	-	-	60	6	10	3
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40	-	-	2
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'95		00%			00%			00%			-33%							
'00		00%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'95	60		-			
												'00	40		-			
Pediocactus simpsonii																		
Y	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	00	4	-	-	-	-	-	-	-	-	4	-	-	-	80		4	
M	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	2	-	-	-	-	-	-	-	-	2	-	-	-	40	0	1	2
	00	7	-	-	1	1	-	-	-	-	9	-	-	-	180	1	2	9
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'88		00%			00%			00%										
'95		00%			00%			00%			+85%							
'00		08%			00%			00%										
Total Plants/Acre (excluding Dead & Seedlings)												'88	0	Dec:	-			
												'95	40		-			
												'00	260		-			

A G E	Y R	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total
		1	2	3	4	5	6	7	8	9	1	2	3	4			
Pinus edulis																	
S	88	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	-	-	-	1	-	-	-	-	-	1	-	-	-	20		1
Y	88	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	00	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>						
'88		00%			00%			00%									
'95		00%			00%			00%									
'00		00%			00%			00%									
Total Plants/Acre (excluding Dead & Seedlings)													'88	133	Dec:	-	
													'95	0		-	
													'00	100		-	

SUMMARY

WILDLIFE MANAGEMENT UNIT 11A (OLD 15)

Summer range on this unit is sampled by two sites, Wirefence Canyon (11A-2) and Chokecherry Canyon (11A-3). Upper Cottonwood Ridge (11A-1) also samples summer range, but was not read in 2000. Wirefence Canyon and Chokecherry Canyon both sample high elevation mountain big sagebrush areas. Cottonwood Canyon (11A-4) and Nutters Canyon (11A-5) sample winter ranges within the unit.

Due to drought conditions in 2000, a majority of the sites show downward browse and herbaceous understory trends. Browse trends are down or slightly down due to increases in poor vigor and decadency. Herbaceous understory trends are down or slightly down due to a decrease in sum of nested frequency of perennial species. With normal precipitation in the future, these trends will most likely improve.

In summary, although pinyon and juniper stands dominate much of the winter range, there are sufficient natural openings to provide good quality winter range. There are pinyon-juniper sites with the potential after treatment, to provide more forage during the fall-spring period. The summer range remains the limiting factor, especially for deer.

Trend Summary

	Category	1982	1988	1995	2000
11A-1 Upper Cottonwood Ridge	soil	est	3	3	NR
	browse	est	3	3	NR
	herbaceous understory	est	5	5	NR
11A-2 Wirefence Canyon	soil	est	3	3	3
	browse	est	3	3	2
	herbaceous understory	est	3	4	2
11A-3 Chokecherry Canyon	soil	est	3	3	3
	browse	est	4	4	4
	herbaceous understory	est	5	3	2
11A-4 Cottonwood Canyon	soil		est	3	2
	browse		est	3	1
	herbaceous understory		est	3	3
11A-5 Nutters Canyon	soil		est	3	3
	browse		est	3	2
	herbaceous understory		est	2	2

(1) = down, (2), slightly down, (3) = stable, (4) = slightly up, (5) = up
(est) = site established, (NR) = site not read